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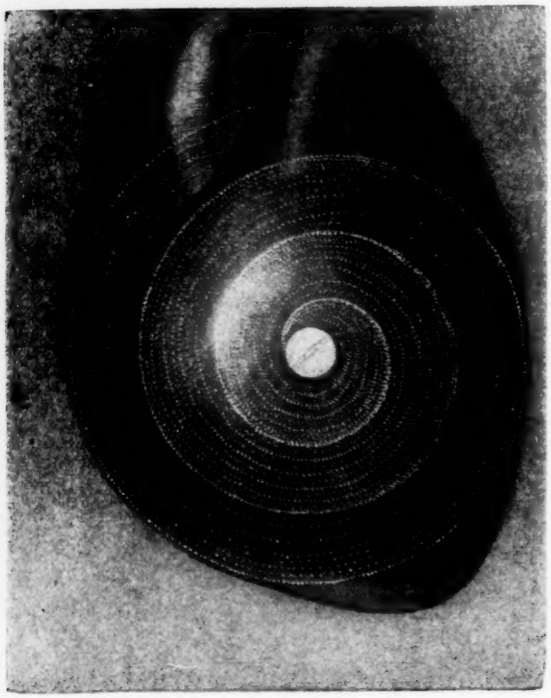

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VOLUME 217 DECEMBER 16, 1937 NUMBER 25

MASSACHUSETTS MEDICAL SOCIETY

Section of Dermatology and Syphilology

Presiding: Dr. C. Morton Smith, Boston, chairman; Dr. J. Harper Blaisdell, Boston, secretary.

The meeting was called to order by the chairman, and after a short business session the following papers were read and discussed. In conclusion, Dr. Frank C. Knowles, of Philadelphia, the guest speaker, gave an interesting and instructive paper entitled "Etiological Factors Preceding or Producing Occupational Eruptions," illustrated with lantern slides.

SYPHILIS LOOKS AT THE DOCTOR

NELS A. NELSON, M.D.*

BOSTON

THAT day has gone when the doctor might look upon his practice as a professional relation solely with his patients and their families. When Pasteur led the world to those heights from which it could behold the expanding horizons of communicable disease control, he made every physician a health officer.

Without the doctor, the entire structure of the modern public health program would collapse. He makes a diagnosis. If it be one of a communicable disease, he is at once conscious of an obligation to the community, as well as to his patient, and he reports the case to the board of health. A representative of the board goes to work upon receipt of this report. The patient is isolated; contacts and sources of infection are sought out and brought under control; water, milk and other food supplies may be investigated, and a number of steps taken to prevent the further spread of the disease.

The physician, quite obviously, has neither the time to make this extensive and often complicated epidemiologic investigation nor the authority to enforce the necessary laws and regulations. But if he fails to report, neither can the board of health, to which the responsibility and authority have been delegated, take a single forward step, since it will be completely unaware of the existence of the infection.

When the physician functions as a health officer by making his report, he puts still other, more powerful, forces into motion. That report, added to those from other physicians, provides evidence of the prevalence of a disease, which the board of health eventually presents to the community. Seeing this evidence, science becomes interested in the investigation of the causes of the disease and its manner of spread, and devises methods for its treatment and control. The community makes appropriations for the practical utilization of the discoveries of science. Water supplies are purified and protected, milk is pasteurized, laboratories are equipped for the performance of invaluable diagnostic procedures and the whole structure of the public health program rises above the foundation of reports from the practicing physician.

The doctor's report of communicable disease, therefore, not only contributes to the immediate protection of the community from an existing infection but, more importantly, paves the way for the invention and application of constructive preventive measures. Moreover, his report returns to him and to his patients in the form of blood, stool and urine cultures and the Widal test for typhoid fever, agglutination tests for paratyphoid and undulant fevers and dysentery, culture examination in diphtheria, sputum examination for the tubercle bacillus and typing for the pneumococcus, blood tests for syphilis, antitoxin for diphtheria, serum for pneumonia and meningitis, arsenicals for syphilis, smallpox and typhoid vaccines, diphtheria toxoid, consultation services, in-

Presented at the annual meeting of the Massachusetts Medical Society, Boston, June 1, 1937.

From the Massachusetts Department of Public Health.

*Director, Division of Genitoinfectious Diseases, Massachusetts Department of Public Health.

formative literature, and so on ad infinitum. Had he failed to take seriously his responsibility as the "ultimate" health officer, neither he nor his patients nor the community would ever have enjoyed the benefits of these freely available services. Legislatures are not ordinarily persuaded to provide for these things without indisputable evidence of their need.

The control of any communicable disease depends, first, upon this knowledge of its prevalence and epidemiology, and then upon the application of one or more of a very few principles of procedure. Broadly they are:

1. Sanitation
2. Immunization
3. Case finding followed by case control.

Sanitation, when it can be applied, is the most effective of these since it involves only the control of an environment rather than of a mass of individuals. The protection of a watershed or the filtration and chlorination of a water supply to prevent typhoid fever is relatively easy. The pasteurization of milk, the disposal by the community of human excreta and the extermination of the mosquito have served, each in its own way, to control once seriously prevalent diseases.

Immunization is more difficult of application because it depends upon the active co-operation of each susceptible individual in the community. It is used effectively, nevertheless, in the control of smallpox and diphtheria and will be used, sooner or later, for the control of scarlet fever and perhaps whooping cough. Under certain conditions it is invaluable for the prevention of typhoid fever.

Case finding, followed by case control through isolation, quarantine and treatment, is the least satisfactory procedure of all, as it depends upon the prompt discovery and immediate and complete control of each infected individual. In the acute upper respiratory infections, it is entirely lacking in any real effectiveness. Measles, mumps, influenza and the common cold become epidemic whenever they choose, and are always prevalent. Spread as they are, no one can escape exposure. They are most communicable either before the diagnosis can be made or before medical advice is sought. Then, although their further spread by the recognized infection may be checked, many potential sources of new infections have already been created.

There are three common diseases, however, for the control of which only case finding and isolation and treatment are available but which do respond to those procedures. They are pulmonary tuberculosis, gonorrhea and syphilis.

Tuberculosis gives way to epidemiologic and therapeutic measures because early diagnosis is possible, only intimate and repeated exposures ordinarily result in active infection, and there is time for case finding before contacts begin to expel tubercle bacilli. Isolation, either actual or through instruction in hygiene, prevents further exposures, and treatment finally conquers the infection. Thus the incidence of tuberculosis has been reduced by nearly seventy-five per cent within the last twenty-five or thirty years.

It is true that any single exposure to gonorrhea or to early syphilis may result in infection. The kinds of contact which constitute exposure are, however, very few and very intimate, and except among the extremely promiscuous occur in any given case between a very small number of persons. Thus, although these two diseases may be immediately communicable, their spread is not ordinarily rapid in the community and an infection may be traced, forward or backward, along definite pathways. The astonishing prevalence of gonorrhea and syphilis is not the result of their rapid spread from a few foci, but of their very slow spread from innumerable foci.

It has been adequately demonstrated by the Scandinavian countries[1] that the control of syphilis by case finding and treatment is entirely possible. Even Massachusetts can boast of real progress in the same direction.[2] Whether further advances will be as slow and painful as those of the past depends upon how seriously the average practicing physician takes his responsibility as a health officer.

And so syphilis looks at the doctor.

At the outset, however, a new and baffling problem arises. The doctor can report to the board of health certain valuable facts concerning each case of syphilis which he sees. He can, thereby, furnish the data which inspires the community to provide serologic laboratories, arsenicals, bismuth, clinic service for the indigent, consultation services and so on. But he cannot routinely identify his patients with syphilis to the board of health as he can in case of other communicable diseases, and thus relieve himself of the many responsibilities which always emerge with the diagnosis of a communicable disease. Case finding and case control are the only available weapons for attack. Since they cannot be used by the board of health directly, they become at once the physician's responsibilities. What he does will be done; what he fails to do will never be done for the control of syphilis so far as it touches upon his practice. Whether or not he contributes to the prevention of its spread depends upon how well he discharges three duties. They are:

1. To make the diagnosis.
2. To control the known infection.
3. To discover related infections.

It is of the utmost importance to the patient, to the public and to the physician himself that the diagnosis be made promptly. Treatment begun in the seronegative primary stage and continued adequately cures such a high proportion of cases, clinically and serologically, that avoidable delay is malpractice. So is unnecessary delay in any stage, since the prognosis becomes rapidly less favorable with time. The risks of uncured syphilis are too great to be lightly assumed as the responsibility of any physician. There is neither the time nor the need to review here the results of failure to make the diagnosis; they may be found in every clinic, in the office of every syphilologist, in every mental disease hospital and in altogether too many new infections, too many physical wrecks and too many early graves. The very existence of so much congenital syphilis is pathetic evidence of an inexcusable failure to discover and treat syphilis in pregnant women. A high level of suspicion, no matter who the patient may be, a dark-field examination or a blood test may mean the difference between cure and disaster, between the prompt control of communicability and the infection of others (often "innocent"), between the discovery of related infections and their continued operation as foci of infection, and between moderate expense and terrific costs (or pauperism) to the patient and his family. Physicians have been spared lawsuits in many tragic instances only because of the patient's reluctance to disclose the fact of his infection to the public through court testimony.

Avoidable failure to make the diagnosis places squarely upon the physician's shoulders the responsibility for every subsequent infection which he might have prevented by making it. These include those caused by a controllable source of the patient's syphilis as well as those which arise directly out of the patient's infection. Sooner or later, many of these will be discovered, perhaps too late. He cannot afford the damage to his medical reputation which will ensue. He cannot shrug his shoulders with the excuse that he did not suspect infection; syphilis is so prevalent in the whole population that he must not be surprised to find it anywhere. He cannot point to his lack of a microscope or dark-field condenser; there is one, as well as an expert in its use, just around the corner. He cannot plead inability to puncture a vein; the procedure can be learned, or a colleague, or even a competent nurse, can do it for him. A serologic outfit is waiting, at his request, to carry the specimen to a public laboratory for free examination.

The second responsibility, control of the known infection, requires an understanding of the communicability of syphilis, knowledge of how to treat it, and ability to keep the patient under treatment.

The communicability of primary syphilis depends considerably upon the location of the open lesion. If it is on the genitalia or some other covered part of the body, the contacts which are likely to result in the spread of infection are fewer than if it is located on the lip or cheek, within the mouth or on the finger. If the lesion is so located that exposure is likely to occur only during intercourse or in sleeping with another person there is usually no reason, provided the patient remains under regular treatment and the infection responds properly to therapy, for limiting his ordinary non-sexual (social and occupational) contacts. Otherwise temporary cessation of employment, isolation at home and even hospitalization must be considered.

It is well, also, to consider the age of the primary lesion, for the older it is, the greater the likelihood that open lesions of the secondary stage have appeared. These may be present on any of the mucous membranes or even warm, moist skin such as that under pendulous breasts and between the thighs and buttocks. The open lesions of secondary syphilis may easily be missed, so that the patient who presents any of the signs or symptoms of this stage should be required, under compulsion if necessary, to avoid any contact which might result in the infection of others. When adequate treatment has caused the lesions to heal, the resumption of contacts which will not lead to the exposure of others may be and should be permitted, out of fairness to the patient. Otherwise he may become rightfully impatient, take matters into his own hands and disappear.

When the lesions of early syphilis have healed, however, the physician's responsibility as a health officer is not yet ended. It appears from the studies of the Co-operative Clinical Group[3] that until the infection has been treated continuously for at least eighteen months with an arsenical and heavy metal, mucocutaneous relapse is possible at any time. The doctor cannot shrug his shoulders over the neglect of treatment. More is at stake than the patient's health; it is not the patient's privilege to decide whether he needs further medical care. Neither has the physician the right to permit him to discontinue treatment prematurely. This is a communicable disease, and the rights of the community and of the patient's family supersede his privilege to neglect his own health. Since the physician is the only one who knows of the infection, he alone is responsible for the control of the patient, until he relinquishes the responsibility by reporting the matter to the official health agency. Even then he may not be relieved unless he has

made a sincere effort to obtain the patient's correct name and address in the first place.

How to treat syphilis need not be reviewed here. The management of early syphilis has been so standardized[3] that no competent physician should find it too difficult a procedure, provided he will keep his eyes open for reactions, seek consultation promptly when they occur, and spend some time acquiring the technic of intravenous and intramuscular injection. If he cannot insert a needle into a vein without making a mess of it, he had better give up trying to treat syphilis, for the patient will put up with only about so much torture before he quits. Many of the infected give up treatment too soon as it is. The physician whose technic is such that it drives still others away only contributes to the further spread of this already too prevalent disease.

Control of the known infection depends, in great measure, upon how completely the physician takes the patient into partnership with him in the management of the disease. The understanding patient co-operates; the mystified patient comes to his own conclusions as to when he has had enough. There are those who are so horrified by the diagnosis that, uninformed promptly as to the prognosis, they attempt or commit suicide. Others are so unimpressed, not knowing that syphilis is a dangerous disease, that they pay little attention to the suggestion that they have "another treatment next week." The average patient decides that he is sick because he sees or feels that there is something the matter with him. He likewise defines cure as the disappearance of signs and symptoms. He has a right to know what syphilis is; what it will do to him and to others unless it is controlled; that it can be controlled; what its management involves; and what are the objectives of the various procedures to be used.

It is useless to be mysterious about blood tests. The whole public knows what they are. Their correct interpretation is what the public does not understand. It is only being stubborn to insist that the result of the blood test is none of the patient's business; he will still wish to know, and if denied the information will make his own decisions as to when he is cured. The patient with a chancre must understand why blood tests may be negative, why a prompt diagnosis is imperative, and that the diagnosis can be made promptly by dark-field examination. Otherwise when he feels better he may refuse to believe that he ever had syphilis because he has never had a positive blood test. He must likewise understand why tests become negative before the disease is cured, and that further treatment is dictated by the unhappy experiences of those who quit with the first negative test. The patient knows when the specimen of blood is taken, and for what purpose. He is naturally curious as to the result. If he understands[4] that blood tests are no more than useful guideposts, of limited significance, that a definite *minimum* of treatment must be had whatever the results of the test, and that the disease can be controlled even though there is never a negative test, he will better appreciate the value of the doctor's advice, look upon a negative test as simply the beginning of the "last lap," and continue treatment.

Attention to details may mean the difference between a satisfied patient and one out of control. The little things which discourage patients are many, and are largely avoidable. It has been said that a smile from the doctor is worth two follow-up workers. If the patient is accepted as a patient, he should be treated as one and not as an unavoidable nuisance whose care is an unpleasant duty. The physician who has any prudish notions about syphilis or those infected with it had better let someone else treat it. The infected are already oversensitive to the implications of their infection. Disgust, impatience or lack of sympathy will soon cause them to disappear.

If a patient understands the cause and significance of an ecchymosis at the site of a venipuncture, knows that nausea may be a valuable warning of the approach of the limit of tolerance of an arsenical, or evidence of his failure to obey instructions as to mealtimes or catharsis, and is taught to report any disturbances promptly because they are "block signals" on the right of way, that patient will interpret reactions for what they are worth when, and if, they occur. He who has not been warned will conclude either that the doctor is a bungler and go elsewhere, or that the cure is worse than the disease and stop treatment altogether. The patient is a human being. It is his body that is being treated. Only his faith in what his physician tells him will make him continue treatment when he no longer feels sick. Confidence arises out of frankness. It is quickly choked by mystery, by excuses for "accidents" *after* they occur and by obvious clumsiness.

An intramuscular injection too low in the buttocks of a truck driver or a railroad engineer may cause him so much pain that he must stay away from work and perhaps lose his job. That will neither encourage him to continue treatment nor make it any more possible, economically, for him to do so. A properly given injection should cause no undue pain, if any at all, but the patient who understands that the medication can hardly be given without sometimes damaging a vein or approaching a small nerve will rarely complain of that amount of pain which is occasionally unavoidable.

Finally, there remains the responsibility for the discovery of related infections. Where did the infection come from? To whom has the infection already been given? The answers to these questions can be learned only from the patient, for he alone can lead the way to his contacts. Only the physician knows the identity of the patient. Unless he is willing to permit a representative of the board of health to interview the patient as to the contacts, the discovery of related infections is the physician's responsibility. He cannot avoid or ignore it without saying, in effect, "The public health be damned."

It is not enough to inquire of the patient from whom he thinks he acquired the infection. He must know that the incubation period of syphilis may be as long as six weeks. All his sexual contacts during that period must be examined, beginning, perhaps, with the one which corresponds most nearly to the average incubation period of three or four weeks. If the lesion is extragenital, especially one on the lip or cheek or in the mouth, not only sexual contacts but others may need examination. A condom or a prophylactic is no guarantee against infection of the pubis, the thighs or the scrotum in the male. A kiss is dangerous in either sex if the paramour has mucous patches in the mouth, so that the use of prophylactics does not exclude the sexual partner as the source.

The patient may be depended upon, in many cases, to bring the contacts to medical attention. Otherwise the physician himself may suggest examination. This failing, the health officer's assistance must be required. Frequently it will be necessary to question the patient on several occasions before the desired information is given, but it must be remembered that avoidable delay only gives the undiscovered infection greater opportunity to spread. The sooner the patient's confidence can be gained and he can be impressed with the importance of case finding, the sooner case finding can begin.

Similarly, the identification of those to whom the patient may already have passed the infection is the physician's responsibility unless he delegates it to the board of health. Although search for the source of an infection may be futile in late syphilis, search for infections in his family is never to be neglected.[5] Congenital syphilis, undetected and untreated, may be suddenly and dramatically disastrous. Syphilis in a pregnant woman discovered in time and adequately treated rarely reaches into the second generation. A baby with acute congenital syphilis may infect its attendants and contacts, even to its uninfected father or sisters or brothers. To permit preventable family tragedies because of an obsolete notion that the physician's obligation does not extend beyond his patient is criminal in the light of modern knowledge.

However long it may take to teach the public to suspect syphilis, and the average physician how to treat it, there is one form of the disease for the control of which the average physician may begin, now, to do something. If every pregnant woman seen by a physician has a blood test made for syphilis at her first visit to the doctor's office, the first step will have been taken toward the eradication of congenital syphilis. If, when indicated, treatment is begun promptly and continued throughout pregnancy, a second major step toward the desired objective will have been taken.

If treatment is begun before the fifth month of pregnancy and continued regularly, congenital syphilis will be prevented in almost every case. Treatment begun later in pregnancy *may* result in a healthy child, and in any event will add greatly to a favorable prognosis and to the probability of eventual cure.

Every prenatal clinic in Massachusetts ostensibly has a blood test made upon every woman admitted to its service. There is no good reason, although many poor excuses are made, why the private practitioner should not perform the same service for his pregnant patients. Inability to master the technic of venipuncture is a feeble defense for a miscarriage, or a dead baby, or one needlessly injured, perhaps for life, because of a preventable infection of the fetus. The physician who cannot take a blood test or who hesitates to attempt intravenous therapy should no more blush to ask for help from a colleague than he does when he refers a patient to a surgeon for an appendectomy. Good health or even life may be at stake in the one case as well as in the other.

The wise physician will also appreciate that syphilis may be acquired during pregnancy; in fact, the wife's occasional indisposition may be the husband's excuse for infidelity. It is safest, therefore, to have another blood test made, or perhaps two, during the latter half of gestation. It is true that many women fail to seek medical advice early in pregnancy. There are many reasons, in addition to possible infection with syphilis, why they should come to medical attention early. It does not seem unreasonable to expect the medical profession to support actively the efforts of health authorities and obstetric societies to that end. Certainly the physician who sees a woman too late in one pregnancy has an excellent reason and a valuable opportunity for persuading her to see a doctor at the beginning of her next pregnancy. And no one has so good a chance to prevent congenital infections as the physician who knows that a woman of childbearing age has syphilis. She must understand

that she will need competent medical supervision during any subsequent pregnancy.

Syphilis looks at the doctor. *Treponema pallidum* knows full well that it enjoys its present awful hold upon the human race because so few people have been taught to suspect infection early, and because so few physicians have done their duty as the only health officers competent to make the diagnosis or in a position to control the known infection or to discover related ones. Whether syphilis, in its appraisal of the doctor, discovers that it can continue blithely to have its way with civilization, or sees in him a new and determined antagonist, depends upon the doctor. The health department will extend to him every conceivable diagnostic and therapeutic aid which he will accept, even to confidential or official follow-up service. Beyond that it is powerless to go.

Room 545, State House.

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Discussion

Dr. C. Guy Lane, Boston: Under the heading of "Syphilis Looks at the Doctor," Dr. Nelson has spoken of certain relations of the physician and the State through the Massachusetts Department of Public Health. Now, under the heading of "Syphilis Looks to the State," I wish to emphasize one particular relation, the problem of the transferred patient. I want it to be understood that I am not arguing in any sense of the word for or against state medicine. This particular relation has been impressed upon me recently in reviewing some of the statistics which have been developed at the skin clinic of the Massachusetts General Hospital. We are carrying some 3000 cases on our follow-up roll. We have some 2600 visits a year and we find that 10 per cent, or approximately 300 cases, are transferred during the year to other institutions or doctors. In a review of some 500 cases of primary and secondary syphilis coming to the clinic between 1930 and 1935, made with the help of the State, we found approximately 20 per cent still under treatment, 20 per cent under observation or on probation, 20 per cent lost, and 40 per cent transferred. In reviewing still further about 100 records of these transferred cases, we found that they had been transferred to fifty-two different places — thirty-two physicians and twenty clinics. The evening clinics, it is true, took the highest percentage. Ten per cent of these people were drifting back and forth between our clinic and the other institution or physician to whom they had been transferred. Now, 60 per cent of these had less than fifteen treatments before their transfer, and therefore there were many potential contagious cases, liable to become late cases and possibly dependent in later life.

Considering that we are able to follow up only 35 or 40 per cent of the patients in whom a diagnosis of primary or secondary syphilis had been made, I want to emphasize the need for a central bureau, or some central organization, for the reporting and follow-up of these cases. I do not go so far as to recommend a registry such as those established in certain states, although that may come in the future, but we do need an agency through which contact with the patient can be maintained by every possible means throughout the disease, and perhaps through the life of the patient, in order to prevent, if possible, the later stages of the disease and contagion from it.

The Massachusetts Department of Public Health, through Dr. Nelson's division, can and does serve as such a central office to which delinquent and transferred cases can be reported, and through which adequate follow-up can be carried out so as to reclaim them. Syphilis therefore looks to the State as a co-ordinating agency in the control of syphilis.

Dr. Walter T. Garfield, Boston: The author has chosen a very ingenious title. His subject is well chosen and the material well presented. He brings out in the beginning what the Department of Public Health has done in other communicable diseases; he next shows what it is doing in the way of preventing syphilis, and then tells physicians what their duties in regard to syphilis are. These are: first, to make the diagnosis; secondly, to control the known infection; and thirdly, to discover related infections. Dr. Nelson chides doctors for laxity in not making a diagnosis earlier. This point is well taken; for we have all seen this mistake and made it ourselves; as the speaker has demonstrated, the other two duties rest largely upon a prompt diagnosis.

Another point is that the confidence of the patient must be won if these other duties are to be performed.

As regards the discovery of related infections, this would certainly be an ideal accomplishment; but here the doctor is sometimes hard put to obtain the facts. First, there may be a number of contacts, and the patient may be reluctant to give all the names for fear that some of these persons do not know that they have syphilis or that some of them may not be infected; he is afraid that these people will learn that he has syphilis, a fact which he does not wish to have published. Another question is: Who is to be responsible for the cost of medical care of these contacts — the patient who reports them, or who? Again we may lose the confidence of the patient by overinsistence on his giving this information. On the whole, these duties are ideal, and if there is any way that they can be carried out, I think it would result in progress in the control of syphilis.

Dr. Nelson: There is one slogan which the Massachusetts Department of Public Health has adopted. We represent the second of two schools of thought. The first, which, by the way, has a good many adherents, insists that syphilis and gonorrhea should be treated as is any other communicable disease. Its members went so far at the Washington conference as to maintain — without final success, however — that patients with syphilis and gonorrhea should be reported by name and address, and followed by the health officer. They held that the sooner we adopt this system, the sooner we shall remove the horror of syphilis and all the other objectionable elements which surround it and gonorrhea.

The other school of thought believes, as we in Massachusetts do, that the farther away from the infected patient we can keep the health officer or the official agency, the more rapid will be our progress in controlling syphilis and gonorrhea. To that end the Massachusetts Department of Public Health has sought to provide for treatment through clinics (at the department's expense but under the administration of the clinics), and for adequate follow-up service so far as possible, in order that the epidemiologic investigations, search for sources of infection and contact,

and the return of the delinquent patient for treatment may be carried out by a representative of the treating agency. We believe that a representative of this agency, be it a clinic or a physician or an institution, can call on the patient or meet him wherever necessary, with a great deal less disturbance to the patient than can a health officer. The minute a health officer or a representative of the State department approaches the delinquent patient, the latter's reaction is concern lest the treating agency has violated a confidence, and, secondly, fear that the fact of the infection has become public property and is registered in the State department office. To that end also, we have, and are attempting to promote, what we call a confidential service for private physicians; we are willing (in a limited number of cases at present, because of inadequate staff) to provide physicians with a nurse or a social worker trained in the follow-up of syphilis or gonorrhea. She becomes the physician's employee while she is investigating his cases. She learns the identities of the patients directly from the physician; she follows them in his name. If she allows the patient to learn that she is a member of the staff of the State department, she is likely to lose her job. She reports to the physician the results of her investigation, and it is his responsibility thereafter to take whatever action he feels is necessary. She reports to us only statistically: as to the number of cases she has followed for the physician, and the types of cases. If by accident or through carelessness she permits the identity of a single patient to become known to anyone in the State department office, she again stands a good chance of losing her job. In other words, we are trying in so far as we can to make all this epidemiologic investigation, which I will admit is difficult, easier for the physician and for the treating agency by providing them with the follow-up service to do it.

That, I think, is in answer to Dr. Lane's suggestion that there should be a central bureau. I do not believe that we can make a third party, whether it be the health officer or his representative or a central bureau, nearly so effective in dealing with the infected patients as we can a representative of the treating agency to which the patient has already disclosed his infection.

In answer to Dr. Garfield's suggestion, I may say this: it is well appreciated that sometimes, perhaps in a large proportion of cases, it is impossible to find the contacts or the sources of infection. Simply because it is a difficult and, I believe, not fully tried procedure, there seems to be no good reason for not attempting to do it.

Some of our clinics, notably that at Lowell, have been exceedingly successful, after a proper explanation of the purpose to the patient, in locating contacts and sources of infection. I think that is the experience of any clinic with a good follow-up service.

There is a story I like to tell, which is a true one, of the physician who saw a patient with a primary lesion of the lip. He suspected that the lesion was a chancre — he was a good physician to that extent. He had a dark-field diagnosis made, and to that extent he was an unusually good physician because he did not wait for serologic tests. He knew how to treat syphilis; he knew he could give the patient good treatment. He might have stuck out his chest and said, "I have done the patient a good job and that is the limit of my responsibility"; but he was not that kind of physician. He said: "This is a communicable disease. It came from somewhere," and he found the patient's source of infection. Even that was not sufficient; he said: "This disease is a communicable disease and it may already have gone somewhere else. That is particularly true because it is a lesion of the lip." He questioned the patient as to his contacts and found that he had attended a church social at which he had indulged in a kissing game, and before the smoke had all blown away that physician had been responsible for uncovering seventeen cases of syphilis. Now nobody knows where the waves of that outbreak might finally have wound up in terms of marital infections, congenital infections, and so on. If that physician had shrugged his shoulders and had said: "To be a health officer is not my responsibility. It isn't my fault that it is impossible for me to delegate the authority for doing this epidemiologic work to the State department," nothing would have been accomplished. He did it, and the result was to the benefit of the public health.

I may say to Dr. Garfield that in searching for contacts and sources of infection it is our practice — and it could just as well be the practice of the physician — never to tell the suspected source or the contacts the name of the patient who gave the information. It is possible simply to say that we have reason to believe that there has been exposure to syphilis or gonorrhea and advise the source or contact for the sake of his or her health to have an examination. We consistently refuse to give the original patient's name. We shall not lose the confidence of the patient by insisting upon finding out where communicable diseases come from and where they have gone. We make it clear to the patient that we are not detectives in search for evidence of moral delinquency but physicians and health officers making a sincere effort to determine how to control a serious communicable disease.

Dr. William A. Hinton, Boston: Before I begin my paper I should like to say that Dr. C. Morton Smith is the real discoverer of the Hinton test. Many years ago he became very much interested in serologic work, and as I recall he was the first person who reported this test at one of the national dermatologic meetings.

Some of us are very pleased, and I am sure Dr. Smith will be more than pleased, to learn that in the latest evaluation of serologic tests for syphilis the State of Massachusetts laboratory excelled those of the other thirty-eight states. I want to express my personal appreciation of Dr. Smith's discovery.

THE SIGNIFICANCE OF A POSITIVE BLOOD TEST FOR SYPHILIS

WILLIAM A. HINTON, M.D.*

BOSTON

IN THE campaign against syphilis recently initiated by Surgeon General Parran of the United States Public Health Service, blood tests will play a dominant role in detecting the disease and in estimating the effects of treatment. It is therefore important that the results of these tests, particularly the positive reactions, be correctly interpreted. The thirty years which have passed since the invention of the Wassermann test have seen many changes and additions to methods of performing blood tests for syphilis. During this time, the correlation of clinical data with information on the blood reaction of both syphilitic and nonsyphilitic patients has caused us to modify some of our ideas about the meaning of a positive blood test for syphilis.

GENERAL CONSIDERATIONS

Flocculation tests are, generally speaking, more efficient than Wassermann tests. Before discussing the significance of a positive blood test for syphilis, it is well to call attention to a rather general but false belief that a Wassermann test or any of its modifications is more reliable than a flocculation test, of which the Meinicke, Kahn, Hinton and Eagle tests are some examples. In theory, these two types of tests are based on the same principles; the essential difference is in the technic of their execution. In actual practice, as shown by surveys of the League of Nations and of the United States Public Health Service in cooperation with the American Society of Clinical Pathologists, the flocculation tests are in general more accurate than the Wassermann. A recent editorial[1] in the *American Journal of Clinical Pathology* sums up the situation in these words: "On the basis of both sensitivity and specificity, the flocculation tests are equal or superior to the complement fixation tests." Besides this, the flocculation tests have definite practical advantages. In the first place, they are simpler, and therefore more likely to be performed in the manner recommended by their inventors; secondly, since they require fewer variable reagents they should, if devised so that they are easy to do and easy to read, give practically the same results in all laboratories which perform them carefully.

Accuracy of individual laboratory is important. In judging the significance of a positive blood test, it is necessary to consider not only the efficiency of the method but also the accuracy of the laboratory employing it. This is strikingly exhibited in a recent report of the Committee on the Evaluation of Serodiagnostic Tests for Syphilis.[2] According to this report, when fifteen different laboratories using one much-used complement fixation method carried out tests on specimens from a group of 200 persons known to have syphilis, the number of positive tests reported by the separate laboratories varied from a minimum of 32 per cent to a maximum of 71 per cent. On specimens from presumably nonsyphilitic cases which might be expected to yield only negative tests, there was also disagreement, for although some of the laboratories reported no false positive tests, two of the fifteen submitted 3 per cent of false positive reactions on identical specimens of blood. Another group of thirteen laboratories using a well-known flocculation test on comparable specimens obtained results varying from 38 per cent in one laboratory to 84 per cent in another; and two of the laboratories in this group reported as many as 2 per cent of false positives on serum from presumably normal persons. Such differences in reports between separate laboratories using the same method make the significance of a positive reaction extremely dubious unless the accuracy of the laboratory making the test is known. It is to be hoped that this difficulty may be overcome by some system of certification indicating the degree of accuracy with which a laboratory performs any given test for syphilis.

SIGNIFICANCE OF POSITIVE TESTS IN RELATION TO DIAGNOSIS

Under this heading I shall discuss only the value of blood tests in determining the existence of syphilis, deferring until later the consideration of their value as an indication for treatment.

Positive blood test accompanied by history or clinical signs of syphilis. In patients who have a history or signs of syphilis, a positive blood test is ordinarily all that is required for an accurate diagnosis, but even here caution is needed to exclude a false diagnosis on the basis of a single positive blood test. The following will illustrate this. An ulcer on the penis was incorrectly diagnosed as a primary lesion because of an accompanying positive blood test. In the opinion of another physician, however, the ulcer was clinically

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*Chief, Laboratory Department, Boston Dispensary.

not a primary lesion; repeated dark-field examinations showed no treponemas; treatment was withheld; blood tests and dark-field tests were continued; the patient's serologic reaction became negative in a few weeks; he never developed signs of secondary syphilis, and it was concluded that he did not have syphilis. In another case, a competent dermatologist diagnosed a rash as that of secondary syphilis on the basis of a single positive blood test. Subsequent blood tests were negative, and the course of the disease showed it to be a case of psoriasis. Although such mistakes as these are perhaps uncommon, their occurrence is increased by placing complete faith in a positive blood test as indisputable evidence of syphilis. Therefore, inasmuch as there are signs or symptoms which may simulate those of primary or secondary syphilis, more than a single positive blood test should be had if there is any doubt about the diagnosis.

Since tertiary syphilis is rarely communicable four to five years after infection except by a mother to her offspring, it is seldom necessary from the standpoint of public health that treatment for these patients be started immediately. Before a diagnosis is made or treatment is started, therefore, a positive blood test in a person with suggestive symptoms of tertiary syphilis should always be confirmed by a repeat specimen; besides this, it is always wise to seek all other possible evidence on the certainty of infection. This may often be obtained by examining a husband's, wife's, or mother's blood and by a careful history concerning past exposures.

Such caution in the interpretation of a positive blood test is not advised in order to minimize its significance, but in order to emphasize the importance of clinical evidence in a diagnosis of syphilis. In fact, since repeatedly positive blood tests by the more accurate methods usually do indicate syphilis, the physician should in all doubtful cases exclude or confirm this disease by a most careful investigation. This is equally true if there is a negative Wassermann and Kahn, but a positive Hinton test. A persistently positive Hinton is almost as strong evidence of syphilis as if all of the tests were positive. From the foregoing, it must be apparent that an accurate diagnosis of syphilis in any stage can be made only when it is based on clinical evidence plus a positive blood test.

Positive blood test unaccompanied by history or clinical signs of syphilis. Although the commonest and most important evidence of infection with syphilis is a positive blood test, this reaction may also be caused by other diseases: yaws, as commonly as syphilis; leprosy, in from 40 to 60 per cent of the cases; sometimes tuberculosis or cancer; and occasionally other diseases. It may, for that matter, be obtained as the result of errors in laboratory technic or, rarely, because of imperfections in even the best blood tests. Indeed, in the recent evaluation of laboratory tests for syphilis this point was strikingly brought out by the committee[3] in charge of the evaluation. The committee "found no justification for a diagnosis of syphilis in a number of cases, particularly in one series in which the diagnosis had been based on a single false positive reaction." It recommended that if a positive blood test is obtained in a person with no history or clinical evidence of syphilis, the test should be repeated in the same laboratory, using two or more different methods. Even such a procedure as this is not conclusive evidence of the existence or nonexistence of syphilis. For example, in one of the evaluation studies[4] 10 of the 13 different tests for syphilis on a single patient were positive, yet it was concluded on exhaustive clinical evidence that the patient was not syphilitic but tuberculous. Consequently, one sees the fallacy in the all too prevalent belief that the result of a laboratory test *alone* may safely be used to diagnose syphilis.

For reasons such as these, I believe that when no clinical evidence of the disease exists, a positive blood test is the signal, not to begin treatment forthwith, but rather to confirm the positive reaction by repeated serologic examinations, and then to study the patient — his history, his family, his spinal fluid — so as to determine whether he really has syphilis. For this purpose, a consulting syphilologist is recommended. The better hospitals meet the problem by referring the patient to one of their physicians who specializes in syphilis. Such a physician has acquired the knack of eliciting a history or "collateral evidence," as Stokes calls it, bearing on syphilis. He is often able to elicit information that not only warrants a diagnosis of this disease but indicates the approximate time of infection. The latter factor is most important in the management of syphilis, because the duration of infection in a person not only defines his capacity to transmit the disease, but also suggests the likelihood of later injuries.

If clinical evidence is so necessary for an accurate diagnosis of syphilis as has been indicated, it may well be asked, What is the good of doing blood tests? This partial list of reasons is sufficient answer. Positive blood tests (1) abundantly verify clinical syphilis, (2) usually give doubtful clinical evidence real significance in diagnosing syphilis, and (3), perhaps most important, detect fully 50 per cent of syphilitics who would not otherwise be suspected.

SIGNIFICANCE OF POSITIVE BLOOD TESTS IN RELATION TO PROGNOSIS

No blood test, in itself, defines the outcome of syphilis. Some laboratories report the intensity of the reaction that occurs when the patient's serum and the reagents of the test are mixed. Whether such a quantitative evaluation of a positive blood test is made by using more than one dilution of serum, as in the Kahn test, or by visual estimation of the strength of the reaction in one test tube, it is valuable chiefly in providing the laboratory with a check on itself, and is of no value in the management of syphilis. My reasons for believing this are briefly as follows. The strong reaction, commonly designated as a 4+ test, may be found in all stages of syphilis, and is quite as apt to occur in patients who are readily amenable to treatment as in those who resist it to the extreme. On the other hand, the weak or so-called 1+ test may likewise be found in every stage, although rarely in the second. It may be found in persons who are fatally injured by syphilis as well as in those who give no manifestations of it. In short, the strength of the reaction throws no light on the stage of the disease, nor on the character, duration or site of the lesions; these are the factors, all of them clinical, upon which we actually base our prognosis. This conception of the relative unimportance of the strength of a positive reaction in prognosis is difficult to acquire, because in the test tube the strongly positive reaction is striking. The words "strongly positive" are equally striking, and carry the implication of "bad" syphilis as contrasted with the "mild" syphilis implied by the report of a weakly positive test. Such inaccurate conceptions concerning the significance of a positive blood test are unfortunate, and can easily be avoided if the results are reported simply as positive, negative or doubtful.

SIGNIFICANCE OF POSITIVE BLOOD TESTS IN RELATION TO TREATMENT

Although a positive blood test, in most cases, is good evidence that syphilis exists or has existed, it sheds no more light on the necessity for treatment than a positive tuberculin test does in tuberculosis. It would be fine if syphilis could be adequately managed purely on the results of blood tests, or even largely so. Then a positive laboratory report would call for treatment, and if the report were negative, no treatment would be given. As is well known, the successful treatment of syphilis is far more complex than this, and is actually based largely on clinical knowledge of the course of the disease. If the clinical picture indicates that the patient is infectious or that he is likely to receive further injury from the disease, or that he has tertiary injuries which need to be healed in hope of restoring the injured tissue to normal function, the positive blood test merely aids in establishing syphilis as the etiology. The criteria by which treatment is administered, however, are based on the stage of the disease and its manifestations. This is shown by the fact that there are plans of treatment recommended for the early stages, and that there are other pretty definite schemes of treatment for such tertiary manifestations as cardiovascular syphilis, neurosyphilis, and hepatic and other forms of visceral syphilis.

Most syphilologists recommend that all patients who have repeatedly positive blood tests, even if there is no other evidence of syphilis, be treated provided there are no contraindications because of age or physical condition. However, I believe that a positive blood test, unsupported by any other clinical finding, is not an indication for immediate treatment but for a thorough investigation designed first of all to establish that the patient has syphilis, and secondly to throw some light on the duration of the infection. If in the opinion of a skilled syphilologist there is absolutely no clinical evidence of the disease, I recommend an examination of the heart and aorta by a cardiologist and an x-ray expert, and an examination of the spinal fluid. If the spinal-fluid and other examinations disclose no evidence of syphilitic injury, blood tests should be made at monthly intervals for at least a year and the spinal fluid again examined. If it is still negative, I do not believe that the positive blood tests should be considered a sign to begin treatment, unless the individual is a pregnant woman or is contemplating early marriage.

My reason for recommending a long period of observation rather than treatment for those with repeatedly positive blood tests as the sole evidence of syphilis is based on a consideration of the groups into which these cases appear to fall. If, for example, the clinical evidence seems to favor congenital syphilis, a decision to treat or not to treat should depend largely upon the patient's age. It rarely happens that congenital syphilitics who reach twenty-one and have positive blood tests but no other sign of the disease are injured by it in later life. The tabulations of Jeans and Cooke[5] indicate that after nineteen the chances of late injury are 1 in 193, and the tabulations of the American Clinical Co-operative Group[6] appear to extend this likelihood for interstitial keratitis up to twenty-five years of age. If the clinical evidence — exposure and so forth — is more consistent with acquired syphilis, and the circumstances of the patient's life suggest that he has been infected for more than twenty years, the physician who is influenced by Bruusgaard's[7] observations would regard later

injury as very improbable. In such cases, most syphilologists handle the problem of treatment on the basis of the patient's age by saying that persons beyond fifty who have a positive blood test and no other signs of syphilis do not require antisyphilitic treatment that includes arsphenamine. Indeed, some physicians doubt the wisdom of treating these patients at all.

Next, may any dependable inferences be drawn from the disappearance of a positive test or decrease in the strength of the reaction during treatment, and from a fixed or a resistant positive reaction? The answer is, practically speaking, No. For if treatment is withdrawn simultaneously with the disappearance of the positive reaction in early syphilis, it will in most instances have been withdrawn far too early; and if it is continued on the basis of a fixed or a resistant reaction in late tertiary syphilis, it will in many cases be continued far too long. In the present state of our knowledge concerning the serology of syphilis, the treatment of fixed positive blood tests is a dark page. One almost shudders to see a congenital syphilitic treated for five, ten, fifteen or even twenty years almost continuously, merely on the basis of a positive blood. The persisting positive has no prognostic significance. Many syphilologists recognize this by saying that those patients with fixed positive reactions fare no worse than do those who become negative, an opinion definitely verified by the statistics of the American Co-operative Clinical Group.[8]

In one important regard, blood tests repeated at approximately two-month intervals are of the greatest advantage as a guide in treatment; this applies to the early stage of syphilis, when a relapsing positive is a warning that treatment is not controlling the disease. I say this because the studies of the American Co-operative Clinical Group, as well as our own, show that in about half the cases of early syphilis in which there was a relapsing positive, there was also a clinical outburst of the disease. The significance of a relapsing positive in patients infected for from five to twenty years is not so clear cut; nevertheless, I should be inclined to pay a great deal of attention to it during the first ten years of the disease, and decreasing attention to it during the next ten. In patients infected for more than twenty years, serologic relapses do occur, but I ascribe no especial significance to them, for they are not uncommon and, so far as I know, are almost never followed by clinical manifestations of active syphilis.

SUMMARY

1. An accurate flocculation test for syphilis, competently done, offers the best aid in detecting the disease.

2. The strength of a positive reaction is without significance in prognosis.

3. A positive blood test is perhaps the most valuable aid in the diagnosis of syphilis, but by itself is not diagnostic.

4. A positive blood test *alone* is neither a sign to begin nor, if it persists, a sign to continue treatment.

25 Bennet Street.

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DISCUSSION

DR. HARRY C. SOLOMON, Boston: I have had the privilege on several occasions of discussing papers by Dr. Hinton, and at the same time the pleasure of most heartily disagreeing with him. Today, I have very little pleasure in store for me in disagreeing, because I think he has adequately handled a very timely subject. I am in almost entire agreement with everything he has said.

If I gather correctly, leaving aside the serologic implications, his first and most important point is that those who treat syphilis must be extraordinarily good medical men because there is throughout a constant need both of good clinical observation and, more particularly, of extraordinarily good judgment. He opens up a lot of very important and interesting problems: What sort of syphilitic patient should be treated, and how much should he be treated? That problem has defied us during the modern age of the arsphenamine treatments.

I shall take up first the problem of the "fixed" or "fast" Wassermann or Hinton reaction, which has been a matter of interest to many of us. We have treated many patients with "fixed reactions," and while we were dealing with the old Wassermann test we found that in some of them, by continuous treatment for ten or fifteen years, we were able to get negative tests. Then when the Hinton test came into the picture, those patients again showed a positive reaction; obviously if we get still more sensitive reactions many of these patients will need continuous treatment throughout most of their lifetimes. But what would be gained? What about the cases that in spite of negative Wassermann reactions go on to marked cardiovascular breakdowns? Would this be prevented by more treatment? It always seemed to me that damage having once occurred in the vascular lining, there would be a continuation of the regressive process irrespective of any activity of the spirochete. In other words, if the elastica of the blood vessel is damaged, it is no longer going to be a competent blood vessel, and with time and use it is going to be in danger of a breakdown. So far as I am able to see, there is very little to be gained through great prolongation of treatment in stopping the development of aneurysms.

There is one other side to the picture, however, that Dr. Hinton did not discuss, probably owing to lack of time. Those of us who have had the experience of withholding treatment with the congenital luetic because he was

eighteen or nineteen years of age, had never had any trouble and was a fine physical specimen, and then seeing an outcropping of acute interstitial keratitis, are reluctant to do so again, even though the chances are slight. If one sees a youth of that age suddenly become deaf from an impairment of his auditory nerves — a condition which is rare but one that most of us have seen — we again find it terribly difficult to stand back and do nothing. Nor do I think we should withhold treatment.

Finally, the matter is complicated when we first see a case of syphilis because we know so little of what the trouble is going to be. I think we can divide the cases of early syphilis into three groups. First come the cases in which no treatment is needed, because the patients will have no symptoms during a long life. Secondly come the cases which need little or no treatment. If they have no treatment, they will probably have some unimportant manifestations, which a little treatment would avoid. Between 20 and 40 per cent of syphilitic cases, if not treated or given relatively little treatment, will do just as well as if they were treated intensively. This makes it very difficult to evaluate results. Thirdly, there is a group of patients who, despite any treatment that we have available today, will sooner or later break down with syphilitic accidents. Some of these do worse when we treat them; they have not the resistance to stand the type of drugs employed. As we know, some people are very sensitive to any of the arsphenamines; they may be damaged not by the syphilis but by the drugs plus the syphilis. The drug cannot control the syphilis, but breaks down some other resistance.

I take Dr. Hinton's main contribution to be that nowhere in medicine are we confronted with more difficult decisions than that as to what should be done to a certain percentage of our syphilitic patients.

Dr. Austin W. Cheever, Boston: Frankly, I do not see very much to discuss, for Dr. Hinton has given a perfectly splendid exposition, and I heartily agree with all the points he has made. I wish that we could do more to get some of these ideas to the men on the firing line. It was only two or three days ago that a visitor from outside the State, a recent graduate, hearing me talk to a small group of students, said, after a while, "Doctor, do you really mean, what I think I gathered from your remarks, that the Wassermann test is not so good as these more modern tests?" I cannot quite grasp that attitude on his part, but he was very serious about it. On the other hand, the Hinton test is bringing to light many cases in elderly people which we certainly wish had not been disclosed. The patient becomes very much upset, even though nothing need be done so far as we know; and yet, Do we know? How can we decide? Dr. Solomon has presented the statistical side, but confronted with the patient, How good are statistics? How about the man of fifty-five with a positive Hinton test, when we cannot determine definitely when he was infected? What can we say to him as to whether he requires treatment? We need more study on that problem; and I must emphasize again that we must not forget the clinical side, and must obtain histories very carefully.

A short time ago, I came across a woman of fifty-seven with a positive Hinton test. She was terribly frightened by it, and felt that she had all sorts of horrors ahead of her; but without much difficulty she was found to be a case of congenital syphilis, Hutchinsonian teeth remaining even to that age. Certainly she does not need treatment. A man of sixty-seven with a positive Hinton test, who had had a Wassermann test a good many times because he had had a wet-nurse infection when he was a baby, died shortly after the Hinton test; a searching autopsy showed no signs of syphilis. He certainly did not need treatment. Just when to give treatment is a problem that can be answered only by further study.

Dr. Hinton: First of all, in reply to Dr. Solomon, I have been taken severely to task because I said I did not feel that all syphilitics should be treated. I do feel that the facts, as Dr. Nelson just explained, should be given to the patient; if he then wishes to assume the responsibility and risks of going without treatment, all well and good. Of course we all realize that there are hazards in treatment; these should be explained to the patient, and his chances mapped out to him more or less in the manner of the competent specialist. If the patient wants treatment, he should certainly have it. If he does not want it, and prefers to run his chances, I think he should be allowed to do so provided he is not likely to infect someone else. At my age, if I had a positive reaction and nothing else, and had been infected twenty-five years ago, I surely should not want treatment. However, there are people who would want it.

In answer to Dr. Cheever, I may have been misunderstood. The man of fifty who has a primary or secondary lesion ought to be treated, not so intensively as, for example, a man of twenty-five or thirty, but he should certainly be treated with arsenicals and that sort of thing to control his infectiousness.

ROENTGENOLOGIC MANIFESTATIONS OF SYPHILIS

GEORGE W. HOLMES, M.D.,* AND JAMES R. LINGLEY, M.D.†

BOSTON

SINCE the subject is rather an extensive one, time will permit only a discussion of its major aspects. We have divided this paper into five parts, according to the various systems involved by syphilis in which roentgen examination is of chief value, namely the bones, the joints, the lungs, the cardiovascular system and the gastrointestinal tract. In dealing with syphilis of the bones, we shall discuss congenital and acquired syphilis separately.

CONGENITAL BONE SYPHILIS

Congenital syphilis may be diagnosed by clinical, serologic or roentgenologic evidence or after a correlation of the three. Roentgenologic evidence is based on changes demonstrable in the osseous system, which are quite characteristic and which often permit an unqualified diagnosis independent of the clinical or serologic evidence. During the first four months of life, when a negative serologic test is often unreliable, roentgen examination of the long bones is of paramount importance because at this period the osseous changes are at their maximum. Ranvier[1] in 1864, Parrot[2] and Wegner[3] in 1871, Fraenkel[4] in 1911, and Alexander[5] in 1915 carried on extensive investigations of these changes. More recently McLean,[6] Ingraham,[7] Vogt,[8] Parmelee and Halpern,[9] Pendergrass and associates[10] have demonstrated the value of roentgen investigation, and its importance in the diagnosis of congenital syphilis.

As stated before, maximum osseous changes in congenital syphilis are manifest in the first four months of life, rapidly diminishing after the sixth month. After the second or third year the lesions take on the character of an acquired infection. Ingraham has shown that the first syphilitic bone change, osteochondritis, appears about five weeks after infection of the infant and that periostitis first appears from two to three months after the osteochondritis, or about four months after infection. He concludes that the optimum time for a roentgen examination to be positive is when the infant is six weeks old, but if the mother has received antiluetic treatment, the optimum time is between two and six months after birth.

Vogt, studying a series of 104 cases of congenital syphilis under one year of age in order to determine the accuracy of the roentgen method of diagnosis, found characteristic bone lesions in 71 per cent, strongly suggestive lesions in 14 per cent, suggestive evidence in 6 per cent, doubtful evidence in 3 per cent and negative findings in 6 per cent. He concluded that bone lesions were present in 91 per cent, and that a positive roentgen diagnosis could be made in 71 per cent independent of clinical signs and serologic tests.

Pathologic changes, demonstrable by x-ray in the bones of infants having congenital syphilis, consist of osteochondritis, epiphysitis, diaphysitis and periostitis.

Osteochondritis is the first lesion to appear, and from the diagnostic point of view the most important. Its earliest manifestation consists of increase in width and density of the provisional zone of calcification, the metaphyseal line. Whereas in the normal this line measures from 0.5 to 1 mm. in width, in congenital syphilis it may be increased to 2 or 3 mm. This finding, however, is not diagnostic, as it may occur in other conditions which produce a temporary arrest in bone development. As the lesions progress, areas of rarefaction appear in the shaft just beneath the metaphyseal line. The trabeculations in these areas are thinned out, diminished in number or completely absent, their place being occupied by fibrous tissue. At this stage, the appearance is characteristic and a diagnosis may be made on roentgen evidence alone. Vogt and McLean both state that a particularly characteristic sign is the finding of areas of rarefaction and destruction of the cortex on the medial upper aspects of the tibiae. This was present in 45 per cent of Vogt's cases.

In the most advanced stage there is complete disorganization of all the structures at the metaphyseal line, and the roentgen appearance is that of zigzag or sawtooth metaphysis. There may be extensive destruction of the ends of the long bones with pathologic fractures through the weakened diaphysis, or an epiphyseal separation with much deformity.

The areas of rarefaction in the shaft may not be confined to the submetaphyseal region but may extend throughout the entire shaft, producing a diaphysitis which simulates a pyogenic osteomyelitis. Periostitis is seldom found in infants without

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*Roentgenologist, Massachusetts General Hospital.

†Assistant roentgenologist, Massachusetts General Hospital.

osteochondritis. It may occur over an intact shaft or only over areas of osteochondritis in the metaphysis. It nearly always accompanies severe lesions of the metaphysis, and often remains long after the osteochondritis has healed. Parmelee and Halpern[9] find that periostitis is almost never present in the newborn but becomes moderately frequent by the sixth week, and is present by the third month in more than half the cases showing osteochondritis.

The changes which appear in the epiphysis in congenital syphilis are less characteristic than those of osteochondritis. The center of ossification may show irregular areas of rarefaction, which may coalesce, leaving only a ring of density about the periphery. At this stage the appearance closely simulates scurvy. Later there may be a rarefied zone surrounding the ring, and this appearance is diagnostic.

After infancy the bone lesions of congenital syphilis take on the character of the lesions in acquired syphilis. The late bone lesions are often the result of osteitis and ossifying periostitis in the earlier months of life, which produce the diffused thickening and exostoses observed. Stokes[11] states that the period of late bone manifestation is from three to twenty-eight years, with a rarity of occurrence past thirty. In a study of 202 cases of hereditary bone syphilis he found cranial bosses in 43 per cent, saber tibia in 43 per cent, saddle nose in 30 per cent and enlarged epiphyses in 3 per cent. Craniotabes, lesions of the nasal bones, anomalies of ossification, high palate, hydrocephalus, Parrot's nodes and hypoplasia of the teeth are other conditions that may be encountered.

The saber tibia, long considered to be characteristic of congenital syphilis, is a result of periostitis and osteitis involving chiefly the anterior aspect of the bone. The periostitis may be diffuse or localized, varying in extent from a small blister to a general diffuse involvement of the whole bone. The surface may be smooth and regular or lacelike or may have a moth-eaten appearance. The early lesions are often hazy and irregular, while later heavy calcium deposits are laid down parallel with the shaft and the surface becomes more or less smooth and regular. As age advances, osteitis becomes more marked and new bone is deposited, not only on the surface but throughout each haversian system and even in the spongiosum.

In the skull, the lesions vary from an osteitis with bone production on the outer table, with the formation of frontal or parietal bosses, to the destructive gummatous lesions of craniotabes. Menninger[12] draws attention to irregular areas of osteoporosis in the skull due to congenital syphilis.

In addition to the changes briefly described above, the bones in congenital syphilis may show changes indistinguishable from those found in the third stage of acquired syphilis.

ACQUIRED BONE SYPHILIS

The osseous lesions of the third stage of acquired syphilis probably vary more in their roentgen appearance than those of any other disease affecting the bones, and for this reason they may be mistaken for a great variety of pathologic conditions. The lesions may be entirely bone productive, or entirely bone destructive, but usually a combination of the two is manifest. Any bone in the body may be involved, but the lesions are usually limited to one or two bones and often appear after definite trauma. Cases of generalized bone involvement, however, sometimes occur.

The new bone formation may appear on the surface of the bone as a periostitis. It may be laid down in irregular masses with the formation of osteophytes, or appear as a lacelike formation over the cortex. Occasionally it is deposited in spicule formation, simulating the perpendicular rays of an osteogenic sarcoma.

In the cortex, new bone formation may occur throughout the haversian systems and on the surface, producing marked irregular cortical thickening with narrowing of the medullary canal. In such cases there is usually an additional irregular bone destruction and the whole picture may simulate a low-grade pyogenic osteomyelitis. Gummas occur in subperiosteal regions within the cortex or in the spongiosum, and appear as localized areas of bone destruction, sometimes without any reaction about them but usually with a surrounding area of new bone formation. The combination of bone destruction with irregular and usually marked bone production in the same lesion should always make one suspicious of syphilis. The lesion most frequently resembling it is that of a low-grade pyogenic osteomyelitis, the roentgen differentiation of these two lesions sometimes being impossible.

JOINT SYPHILIS

Joint involvement occurs in both congenital and acquired syphilis. In the former it is said to be almost as common as the deafness and Hutchinsonian teeth. Congenital syphilitic arthritis can be diagnosed by x-ray only in the rare instances where there is a gumma in the bone with secondary involvement of the joint. The usual roentgen findings in congenital luetic arthritis consist of thickening of periarticular soft tissues and effusion into the joint, changes common to many joint infections.

In acquired syphilis, joint involvement is a late manifestation occurring in the tertiary stage.

Joint changes almost always occur in association with tabes. Since these changes are indistinguishable from those found in syringomyelia, in some cases of compression and destruction of the spinal cord and in some cases of anesthetic leprosy, it is generally agreed that they are trophic in nature. Charcot in 1874 made the first report of a spinal arthropathy. Eloesser[13] through experiments on cats found that cutting the posterior roots produced analgesia, anesthesia and ataxia, and finally changes in the joints similar to those described by Charcot. He concluded that trauma and the lack of warning sense of pain were the causes of most tabetic bone and joint lesions.

The roentgenogram in cases of Charcot joint reveals a very characteristic picture, the changes in the joint in most instances being out of all proportion to the symptoms and clinical signs. There is advanced destruction of the articular surfaces, with sclerosis in the underlying bone and the formation of spurs and osteophytes. The spurs have rounded extremities in contradistinction to those seen in hypertrophic arthritis, and are prone to fracture, with the formation of multiple loose calcareous fragments in the joint. These bony fragments are often present in great numbers, smoothly rounded by friction from opposing surfaces. There is advanced destruction of cartilage, with resultant gross narrowing of the cartilage spaces. Fusion, however, never occurs.

In a case recently reported by Soule,[14] extensive calcification was seen in the soft tissues beyond the joint. Long spicules and sheets of calcification extended along the muscular planes up the shaft for varying distances. Since the patient with a Charcot joint has little pain in spite of the advanced arthritic changes present, bone atrophy is not a prominent feature. The bones surrounding the affected joint are more often increased in density than decalcified.

The joints most frequently affected by tabetic arthropathy are those of the lower extremities, particularly the knees, while in syringomyelia the upper extremities are the sites of predilection.

Recently a number of cases of pathologic fracture of the hip in tabetics have come under our observation at the Massachusetts General Hospital. The unusual finding in these cases was that in spite of the fact that the patients were adults the fracture occurred exactly at the epiphyseal line and resembled the epiphyseal separation of childhood. The head of the femur was separated from the neck by a sharp line of cleavage, which had smooth margins and which corresponded exactly with the plane of union between the former diaphysis and epiphysis.

Dr. Aubrey O. Hampton, who first drew our attention to this condition, is preparing a detailed report for publication in the near future.

LUNG SYPHILIS

The lung is occasionally involved in the third stage of syphilis, and numerous cases verified by autopsy have been reported. It is difficult to determine the incidence of pulmonary syphilis because of difficulty in its clinical diagnosis and even its recognition post mortem. Carrera[15] found pulmonary syphilis in 12 out of 152 cases of known syphilis at postmortem examination, and Erickson[16] found 23 out of 240 cases. He found the routine incidence in 29,680 autopsies, however, to be only .06 per cent.

Since the clinical findings and roentgen appearance of pulmonary syphilis are not characteristic, the diagnosis must be made with great caution, after all other conditions which might produce the picture have been excluded, and after observation of the response of the lesion to antiluetic therapy.

Howard lists the following five diagnostic criteria:

1. Absence of grave symptoms, such as fever, sweating or emaciation, proportionate to the changes in the lungs.
2. Sputum negative for tuberculosis.
3. Presence of other stigmata of syphilis such as in the bones, skin and mucous membranes.
4. Positive Wassermann test.
5. Response to antisyphilitic treatment as controlled by roentgenograms.

Allison[17] believed that the diagnosis necessitated a series of films showing the disease progressive without treatment, and later films showing regression after treatment.

Freedman,[18] quoting Assman, Wile and Marshall, divides pulmonary syphilis into three main groups:

1. The interstitial fibrosing type, the commonest form, which originates from the hilus and extends downward along the lymph spaces and lymph vessels into the peribronchial, perivascular and interlobar connective tissue. A considerable amount of connective tissue is produced, which may cause stenosis of some bronchi and secondary bronchiectasis. The hilus becomes enlarged through connective tissue proliferation and glandular enlargement. The upper lung fields and apices remain free.
2. The gummatous affection, which produces areas of consolidation. These may be situated anywhere in the lungs, pleura or trachea.
3. The diffuse, lobar syphilitic pneumonia corresponding to the pneumonia alba of infants, which is a rare form.

Roentgenologically, the appearance may be that of diffuse or localized linear dulness, usually at the base, with hilus enlargement and with or without bronchial dilatation. In the pure gummatous type, one or more areas of consolidation are seen. These may be sharply defined and rounded in shape, at times closely resembling the lesions of metastatic malignancy. Most of the cases reported, however, have shown a mixture of the two types with the production of bizarre pictures of irregular fibrosis and confluent or discrete areas of consolidation.

Bronchiectasis and areas of partial or complete collapse are frequent findings due to gummatous occlusion of the bronchi.

CARDIOVASCULAR SYPHILIS

The roentgen method of examination of the heart and aorta has been of inestimable value in the early detection of luetic cardiovascular disease and the determination of its extent. That aortic involvement occurred early in a large proportion of cases of syphilis was shown by Maynard and his associates,[19] who in an analysis of 346 cases found evidence of luetic aortitis in 42 per cent. One quarter of their cases developed aortitis within ten years of the chancre, and 8 cases showed cardiovascular disease within three years of infection. This series of cases confirmed the findings of Steel,[20] Sproull[21] and others that the roentgen examination offered a reliable method of determining the disease long before symptoms appeared and before there were any clinical signs.

Dilatation of the aorta may be considered luetic in origin after hypertension and the rarely occurring rheumatic aortitis have been ruled out.

At least three views of the heart and aorta taken at seven-foot distance are necessary for its complete visualization, together with careful fluoroscopic study. The ascending aorta is best seen in the right and left oblique projections, while the arch and descending portions are best seen in the left oblique. Luetic dilatation usually involves the ascending aorta first and to the greatest extent, and as the disease progresses more and more of the arch and even the descending portion may be involved. Aneurysms of the ascending aorta as a rule project anteriorly and to the right, while aneurysms of the descending portion are usually most evident to the left of the spine and posteriorly. Expansile pulsations may be present, but absence of pulsation does not exclude aneurysm. Occasionally a thin line of calcification may be visualized in the wall of the mass. The distinguishing feature of aneurysm is that in no projection can the mass be entirely separated from the aorta, and in some projections a direct continuation of the mass with the aorta can be visualized. Aneurysms erode bone when they come in contact with it and the spine often shows concave defects on the anterior margins of those vertebrae next to the mass. The intervertebral disks, owing to their elasticity, are preserved. Erosion and destruction of the ribs and sternum may also occur in the late stages.

GASTROINTESTINAL SYPHILIS

Syphilis of the gastrointestinal tract is rare. In the esophagus, gummatous involvement is usually secondary to a process in the mediastinum or neighboring bones, although primary gumma of the esophageal wall may occur. Roentgenologically, the appearance is that of narrowing of the lumen over a wide area, the walls being rigid and smooth. The appearance is suggestive of extension stricture from caustics rather than the smaller, more sharply defined defect of cancer.

In the stomach, gummas also produce contraction of the lumen, and the defect varies from a small localized constriction to an extensive contraction involving almost the entire stomach.

Moore and Aurelius,[22] in a study of 87 cases, divide the lesions into three major types according to location:

1. Seventy per cent were *prepyloric*. Almost without exception the defect was concentric and symmetric. Contraction was pronounced and the lumen was markedly narrowed. The contracted lumen pursued a straight course, never being tortuous. The margins were smooth or irregular.
2. Twenty-two per cent were *median*, producing an hourglass deformity. The lesion was concentric and symmetric and the lumen was relatively smooth. The constriction was often quite long, so that the stomach resembled a dumbbell more than an hourglass.
3. Eight per cent were *generalized*, the appearance being that of diffuse narrowing of the entire stomach with the exception of the fundus. The walls were rigid, peristalsis was absent and the rugae were obliterated, but there was no fixation or shortening of the stomach.

In all cases of gastric syphilis, it is rare to find a palpable mass in spite of an extensive roentgen defect; this is a helpful point in the differential diagnosis from cancer. It should be borne in mind, however, that the differential diagnosis of syphilis and cancer of the stomach is usually impossible on roentgen evidence alone.

In the colon, the lesions of syphilis have the same general characteristics as those in the esophagus and stomach. There is marked stenosis, usually of considerable length. The outlines of the defect are smooth, and the transition from the normal bowel into the pathologic area is gradual and not abrupt as in cancer. The considerable length of the constricted area is the most helpful finding for differential diagnosis.

CONCLUSIONS

Roentgen examination offers valuable assistance in the diagnosis of syphilis of the bones and joints, the lungs, the cardiovascular system, and the gastrointestinal tract. Roentgenography alone may establish the diagnosis of congenital syphilis, and it is undoubtedly the most important factor in the diagnosis of acquired syphilis of the bones and joints. Roentgen examination offers a method of detecting cardiovascular syphilis in its earliest stages, and is indispensable for the diagnosis of pulmonary syphilis and syphilis of the gastrointestinal tract.

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Discussion

Dr. Sidney L. Morrison, Boston: Dr. Lingley has so thoroughly covered the subject that the best I can do by way of discussion is to show slides of two or three interesting cases, in order possibly to emphasize some of the points he has brought out. I do not believe we need to attempt to establish the value of roentgenology in the diagnosis of syphilis; that has already been done. But a word of caution should be given. Sometimes if the roentgen report is fairly positive the doctor bases his diagnosis on it; this should be carefully guarded against. Very often we can make a positive or a very probable diagnosis of syphilis, but we should always go carefully into the history, the course of the disease and the serologic diagnosis, and everything should be complete before we make a final diagnosis of syphilis. In some cases the x-ray is a help in following the course of the treatment.

Lantern slides were shown, with remarks by Dr. Morrison.

Dr. Lingley: I should like to thank Dr. Morrison for his discussion. I agree with him that a correlation between the roentgen findings and the clinical aspects is of the utmost importance, but I believe that frequently, in the types of syphilis under discussion, the diagnosis can and must be made on roentgen evidence alone. Sometimes it is the most important factor in establishing the diagnosis, as in the case of infants with negative serologic tests and clinical findings.

Dr. Vogt's system of reporting his findings in infants seems a very good one. He reports them in degrees of probability. If the roentgen findings are absolutely characteristic of congenital syphilis, the report is 4+; if the findings are very definite, but less marked, the report is 3+; lesser degrees of certainty are reported as 2+ and 1+. Where evidence is lacking, the report is of course negative. This method gives the clinician an excellent notion of how sure the roentgenologist feels about his diagnosis.

THE EARLY DIAGNOSIS OF CARDIOVASCULAR SYPHILIS

PAUL D. WHITE, M.D.,* AND NANCY BOWMAN WISE, M.D.

BOSTON, MASSACHUSETTS, AND NEW HAVEN, CONNECTICUT

THE early diagnosis of cardiovascular syphilis is a clinical problem that has for many years aroused much controversy, largely because it has not been adequately analyzed. It is our purpose today to present briefly some facts of fundamental significance, and to illustrate them with the results of our experience in recent years at the Massachusetts General Hospital.

In the first place, it is of the utmost importance to realize what cardiovascular syphilis is and the course of its evolution. Cardiovascular syphilis is really vascular syphilis which may or may not secondarily affect the heart. Rarely is there any direct myocardial involvement in the form of a gumma or a diffuse infiltrative myocarditis. Endocardial syphilis occurs only when the aortic lues extends downward far enough to involve the aortic valve. Pericardial syphilis is practically nonexistent.

Thus cardiovascular syphilis resolves itself into vascular syphilis in the overwhelming majority of cases, and vascular syphilis is in most instances aortic syphilis. Now and then other larger vessels may be involved, in particular the innominate artery. The smaller arteries are infrequently attacked by syphilis to a degree of clinical importance except for the cerebral vessels; cerebral vascular lues probably makes up about 40 per cent of central-nervous-system syphilis, which in turn comprises about 15 per cent of all syphilis. Aneurysms of the smaller arteries are as a rule traumatic, mycotic or congenital, and obliterative disease of these vessels is due to atherosclerosis, to endarteritis obliterans of unknown cause or to rare infections. The coronary arteries are practically never involved by syphilis except as the aortic disease may cause a narrowing or even a complete occlusion of their ostia.

Thus cardiovascular syphilis is essentially aortic syphilis, leaving out the cases of cerebral vascular lues, and our problem boils down to the question of the early diagnosis of luetic aortitis.

Invasion of the aorta by spirochetes begins within a few weeks, or at any rate a few months, after the initial infection by syphilis, and may even occur at the time of the appearance of the chancre. Such invasion may be short-lived if vigorous effective treatment is instituted early or if the aorta does not react to the invasion; that is, the early invasion itself may hardly be said to constitute any disease at all. If, however, the vasa vasorum are blocked and medial destruction occurs, the aortic wall begins to show the effects of the disease process in the course of some years, very rarely more rapidly. For a long time there is no change in the caliber and general appearance of the aorta except for the wrinkling and change of color on inspection of the inner surface of the wall. This stage may last for many years, and healing, either spontaneous or by treatment, may occur before any appreciable dilatation takes place. Even at postmortem examination such partially or wholly healed cases are difficult or impossible to identify; they are likely to show more atherosclerotic changes in the aorta than do nonluetic cases.

As years go by the aorta dilates, especially in the ascending thoracic portion, where the luetic process is most active and the blood pressure greatest. The more physically strenuous the victim, the sooner such dilatation appears and the more rapidly it proceeds. This doubtless helps to explain the speedy progress of the disease to early death in many who perform heavy labor, no matter how good the antiluetic therapy otherwise.

Clinically recognizable dilatation of the aorta in luetic aortitis is rare during the first decade after the inception of the syphilitic infection. This includes both diffuse aortic enlargement and aneurysmal sacs. The secondary effects of luetic aortitis on the heart, consisting of aortic regurgitation and of coronary mouth obstruction, are likewise rare before the aorta has become dilated. Furthermore, it is the earliest portion of the aorta —the first few centimeters—that is very commonly first affected by syphilis, and dilatation of this portion, unless extreme, cannot be made out, even by x-ray examination, because it is located in the midst of the base of the heart.

An early diagnosis of a disease process depends in point of time on the kind of disease, its speed of evolution and its duration. Thus the diagnosis of an acute infectious disease in order to be early must be made within a few hours or at least a few days; in the case of malignant disease it should be made within a few months. It is fair to say that an early diagnosis of cardiovascular syphilis should be made within a few years. Since a clinical diagnosis of aortic syphilis can rarely be made within ten years after infection, it may safely be asserted that *the*

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*Physician, Massachusetts General Hospital.

early diagnosis of cardiovascular syphilis is practically impossible.

If this is so, our interest is naturally next concentrated on the *problem of the earliest possible diagnosis of such disease.* Here we come to a period in the patient's life history covering an interval from about fifteen to about thirty years after the original syphilitic infection. The earliest possible diagnosis will depend on several factors, chief of which are the speed of the development of the aortic disease, the degree of the changes, and the care and experience of the examiner.

In general, only when one or another of the following findings present themselves on examination can a positive diagnosis of cardiovascular syphilis be established: (1) a saccular aneurysm of the aorta or innominate artery; (2) aortic regurgitation appearing for the first time in a middle-aged person with a positive serologic reaction to syphilis; (3) a diffusely dilated aorta without aortic regurgitation or hypertension, past or present. For the detection of aortic deformities x-ray examination is indispensable; no other method suffices. In suspects periodic x-ray study is advisable, probably twice a year.

Angina pectoris is not proof of aortitis with encroachment on the coronary mouths, even when the serologic reactions and past history are positive for syphilis, although it should always arouse this suspicion; nor is aortic regurgitation in the presence of a positive Wassermann reaction proof of luetic aortitis unless the recent onset of this valve defect in middle age has been observed by a careful examiner. These statements are based on the facts that (1) coronary disease itself, that is, coronary atherosclerosis, is common even in youth, and is overwhelmingly the commonest cause of angina pectoris, at least in this part of the world and (2) rheumatic aortic regurgitation is commoner in New England, even in middle age, than is syphilitic aortic regurgitation.

Aortic dilatation is usual in cases with hypertension and with aortic regurgitation, and in such cases cannot be viewed as evidence of luetic aortitis, even in the presence of a positive serologic reaction or a positive history of syphilis, unless the dilatation is of marked degree. Also one must be careful to avoid a common roentgenologic error of interpreting a tortuous, kinked, often elongated and arteriosclerotic, aorta as a dilated syphilitic aorta. Oblique views quickly correct this error.

A loud aortic systolic murmur is often heard in cases with dilated syphilitic aortas, but it is also heard when the aorta is dilated from some other cause or when it is displaced and kinked, and in aortic stenosis, which is never of syphilitic origin but always either rheumatic in etiology or due to sclerotic changes at the base of the cusps. A systolic murmur cannot, then, be taken as evidence of aortic syphilis.

The character of the heart sounds, especially a ringing metallic quality of the aortic second sound, has sometimes been considered to point to luetic aortitis, but such evidence is of little or no value.

Cardiac enlargement and failure of either ventricle or of both, arrhythmias of any sort, and electrocardiographic abnormalities are never clear indications of aortic syphilis. Unless the aortic valve is involved the heart remains normal in size. Heart block, although rarely the result of myocardial syphilis, is overwhelmingly commoner in coronary atherosclerotic disease. Auricular fibrillation is very rare in uncomplicated syphilitic aortitis; in fact its occurrence is actually strong evidence against this condition.

More important than most evidence cited above pointing to luetic aortitis in middle age, except the conclusive clues, is the finding of a positive serologic reaction or a positive history of syphilis. This, of course, is merely evidence that demands a careful search, but it is in many cases, although probably not the majority, accompanied by lesser or greater degrees of aortic disease.

We have had the following experience at the Massachusetts General Hospital in the last twenty years in the diagnosis of cardiovascular syphilis as checked at postmortem examination. In no case did we make an early diagnosis, from the standpoint of a few years, though in very rare cases such should be possible. Moreover, we are naturally dealing with very ill patients in whom there tend to be signs and symptoms of late or advanced cardiovascular syphilis, or in whom such evidence may be masked or overshadowed by symptoms or signs of some other disease which caused death — difficulties for clinical analysis that are inherent in the study of most groups of autopsied cases. We cannot draw conclusions, for example, about the large group of individuals who live in good health for many years with positive Wassermann or Hinton reactions, and who die finally of disease other than cardiovascular lues.

We have scrutinized the autopsies from three points of view; first, the accuracy of clinical diagnosis; secondly, the sex and age of the cases clearly showing luetic aortitis at autopsy; and thirdly, the presence or absence of aortitis at autopsy in patients with positive serologic reaction or a history of primary syphilis.

One hundred and one cases showed luetic aortitis post mortem, apparently still active in 71, though in some cases it was difficult to decide. The antemortem diagnosis was correct in 47 of these, was suspected in 10, and was wholly missed

clinically in 44. In most of the instances that were missed there was no evidence of disease of the aorta or heart on routine examination, which at times included x-ray study, although exhaustive research was made in but few cases; some of these showed no gross deformity of the aorta post mortem, while some might have been diagnosed or questioned had more attention been directed to the possibility of aortitis. It was especially the younger cases and the females in whom occurred the errors of omission. In a few patients some other kind of heart disease was diagnosed, especially rheumatic valvular disease, which coexisted with the aortitis in 5 cases and was wrongly diagnosed (as rheumatic aortic regurgitation) in 4 others. In 12 other patients there was a complicating hypertension with cardiac enlargement, as a rule correctly diagnosed clinically, although the syphilitic aortitis might be missed. In only 2 cases was there a complication of coronary thrombosis.

Luetic aortic regurgitation was infrequently missed, only 6 times among 36 cases; in 3 others it was questioned.

It is to be expected that slight dilatation of the aorta might escape notice, but only 17 out of 37 instances of aneurysms of the aorta or innominate artery were correctly diagnosed; in 4 others the correct diagnosis was suspected. A few of these aneurysms were doubtless so small or in such a position (descending aorta) that they easily escaped notice, but a few were obvious; one of the latter was called esophageal malignancy. A moribund condition affords explanation for several errors of diagnosis. One interesting instance of aortic regurgitation with angina pectoris due to obstruction of the coronary mouths from the aortitis was wrongly diagnosed as rheumatic valvular disease with superimposed subacute bacterial endocarditis, because the patient was only twenty-nine years old and because we had previously encountered a patient with similar signs and symptoms who did have bacterial endocarditis, but in whom we had diagnosed luetic aortitis because of a positive Wassermann reaction.

Of the 101 cases, 86 were male and 15 were female. The diagnosis was correct in 49 per cent of the males and suspected in 10 per cent; among the females, it was correct in but 33 per cent and suspected in 7 per cent. Fifteen of the 101 patients were younger than forty; only 5 of these were correctly diagnosed (33 per cent), in contrast to 57 per cent of those forty or over. The relative difficulty of diagnosis in women and in the younger age groups is what we should expect. The diagnosis was correct in 4 of 10 Negroes and was questioned in 1.

We analyzed the autopsy findings in 125 cases with positive serologic reactions for syphilis (Wassermann, Hinton or both). Sixty-six of these, or 53 per cent, had luetic aortitis; the other 59 did not. Three of those without aortitis were wrongly diagnosed as such on the basis of the serologic reaction plus aortic regurgitation which proved to be rheumatic in origin; one so diagnosed on the basis of a positive history of a chancre without record of any serologic test showed subacute bacterial endocarditis at autopsy. The percentage of positive serologic reactions in the 73 cases of luetic aortitis examined post mortem and about which definite statements were made was 90 (66 cases); a positive history was obtained in 38 (52 per cent). Of 4 cases with a history of lues but negative serologic reaction, aortitis was found in only 1.

It is of some incidental interest to note that among our 101 autopsied cases of luetic aortitis 7 showed definite and 1 other questionable central-nervous-system syphilis; 5 of these cases were correctly diagnosed as such clinically. Of 13 cases (10 males, 3 females) with definite central-nervous-system syphilis, 7 showed aortitis and 6 did not; the 3 females were among the latter.

CONCLUSIONS

It is evident that the early diagnosis of cardiovascular syphilis is practically impossible; that advanced and often rapidly fatal aortic disease is present (as shown by aortic regurgitation or aneurysmal aortic dilatation) by the time it is possible in most cases to diagnose cardiovascular syphilis; and that as a result the prevention of syphilis, or at least its very early recognition with intensive early treatment, is the only adequate method of protecting the aorta and heart from its ravages. That such protection is already being given is becoming evident not only in the present generation in the definite decrease of the incidence of cardiovascular syphilis in certain parts of the world, such as New England, but also in the lesser amount of aortic and heart damage in those cases receiving more adequate treatment at the very beginning of the syphilitic infection, a study concerning which we shall report at a later date.

DISCUSSION

DR. GEORGE A. DIX, Worcester: I cannot, of course, really discuss Dr. White's paper,—he has covered the ground too completely,—but one point requires additional emphasis: the value of early treatment. We syphilologists and general practitioners must recognize that the cardiovascular system is involved in probably 100 per cent of the cases in early secondary syphilis, when the organisms invade every organ and tissue of the body; that is the time when treatment is going to be of its greatest value so far as the heart is concerned, and treatment should be continued during the first five years. This early cardiac involvement, as Dr. White has said, is symptomless and of no particular future importance provided it is controlled at the time by general treatment.

The other group, the late one, I have always felt might

again be divided into two clinical stages. The first is that which precedes destructive changes and has only minor symptoms, which may easily escape notice by the unwarned patient. The second occurs when the disease has progressed to where it interferes with cardiac function and the heart shows symptoms of beginning decompensation. It is vitally important to keep this in mind and to be able to detect the trouble in its first stage; for treatment at that time may prevent or materially delay the second stage.

The syphilologist should invariably share the responsibility of the treatment and management of vascular cases with the cardiologist, as he does other visceral syphilis with the internist. When such patients fall into our hands after decompensation, it is best to wait until rest and care by the cardiologist have rendered it safe to treat them from a luetic point of view; for the luetic treatment of late cardiovascular syphilis is dangerous unless very guardedly given.

As to prognosis: if we can recognize and treat patients in the first half of this late phase while the heart itself is capable of sufficient repair to offset the leak in the aortic valve, we can do much in the way of relief. There is some restoration of function but of course little or no repair, since the damage from syphilitic visceral inflammation is irreparable; so far as the cardiovascular system is concerned, scar tissue is almost useless since it is relatively weak, does not function properly and contracts. In the late stages, after real damage has been done, while we can give some symptomatic relief, we can do relatively little toward restorative function, and practically nothing by way of repair.

Dr. Burton E. Hamilton, Boston: I agree definitely with all that Dr. White has said and suggested.

There are conflicting reports on the incidence of syphilitic aortitis. Naturally our standards for diagnosis and treatment are modified by its reported incidence. The incidence varies tremendously in different institutions and localities. At the Boston City Hospital, Dr. G. Kenneth Mallory found syphilitic aortitis and confirmed the diagnosis by careful histologic study in 33 out of 1300 postmortems during two years, 1935 and 1936. It was found that in previous years it had been diagnosed too frequently from the gross specimens in the same laboratory. This incidence is higher than the incidence at the Massachusetts General Hospital. During the same period Dr. Soma Weiss found that it was diagnosed in his medical wards slightly more often than congenital heart disease, bacterial endocarditis, and deficiency heart.

At the Boston Lying-in Hospital, in 44,000 deliveries, the youngest patient being fifteen, the oldest forty-five, and the average twenty-eight, syphilis was diagnosed 220 times, or in 0.5 per cent. Eight hundred and fifty severe cardiacs were found, but only a single case was diagnosed as syphilitic aortitis. In my office, 0.7 per cent of all patients have suspected syphilis, and 0.4 per cent have a clinical diagnosis of cardiovascular syphilis. This is much less common than congenital heart disease and bacterial endocarditis, slightly less common than thyroid heart, and much commoner than deficiency heart.

Are many cases being overlooked? For what little it is worth, my impression is that undoubtedly some are being overlooked, but very few. This seems inevitable. I agree definitely with Dr. White that we do not have now, and probably will not have, any early, reliable physical signs of cardiovascular syphilis. In discussing this point last evening with a syphilologist, he asked, "Why insist on a reliable sign?" Why not give the patients the benefit of the doubt and treat them if they have suggestive signs, such as a loud basal systolic murmur, a metallic aortic second sound, or slight distortion of the aorta? What harm does it do? Easily heard systolic murmurs at the base of the heart are extremely common, particularly in the aging. Metallic second sounds do occasionally lead to a diagnosis of aortitis, but modifications of the second sound at the base are so common in elderly individuals that none of us dare to trust this sign alone. It seems that basing treatment on these signs would lead to confusion. However, a general principle of "when in doubt, give more treatment," is tempting to a cardiologist. For a single example, syphilis is not uncommon among physicians — the late Dr. Whittemore told me that he had treated twenty-seven physicians who had chancre on a hand — but I have seen only one physician with cardiovascular syphilis. From what I can gather, they not only diagnose it early but for precaution continue to treat themselves throughout their lives. The one case was discovered by the laboratory at a routine physical examination twelve years ago. Followed carefully by a highly trained and skilled syphilologist, the decision has been against more treatment for the last six years. Between yearly cardiovascular examinations, during the last year he developed definite x-ray and suggestive clinical evidence of syphilitic aortitis.

The cardiologist, seeing only the unsuccessful cases, cannot truly offer sound suggestions to the syphilologist for the prevention of cardiovascular syphilis. He can say that we probably shall not discover new, useful, early signs of cardiovascular syphilis, and that x-ray study of the aorta seems to be clearly a part of the routine follow-up of syphilitics, particularly those not considered to need further active treatment. And more review of the clinical as well as x-ray diagnosis of syphilitic aortitis in the light of postmortem diagnosis is in order.

Dr. Hinton: In Dr. White's cases, approximately how many had active lesions at the time of postmortem? Or were they all scarred?

Dr. White: Nearly all were scarred, but some still showed active aortic lesions.

Treatment, in our minds, depends on the condition of the patient. We have made it a rule not to treat patients with heart failure with any specific antiluetic therapy until the failure has been relieved, and then we start very cautiously. We begin with mercury or bismuth. We can go ahead much more rapidly with patients with a relatively slight amount of cardiovascular disease due to syphilis and without large hearts; we start them with bismuth and then alternate with courses of arsphenamine and bismuth. Each case must be judged according to the degree of damage to the heart and aorta, the size of the heart and the evidence of its efficiency.

MAPHARSEN IN THE TREATMENT OF CARDIOVASCULAR SYPHILIS

Preliminary Report

Bernard Appel, M.D.*

BOSTON

THAT the problems of syphilis of the cardiovascular system are as grave as those of any other phase of the disease is a fact too well known to need extensive elaboration. It may be of value, however, to indicate briefly certain aspects of those problems. The term "cardiovascular syphilis" is to be interpreted in this connection as referring to aortitis, aneurysm, aortic regurgitation and myocardial changes, alone or in combination, as demonstrated either by clinical picture or laboratory tests or both.

A glance at the incidence of cardiovascular involvement is of interest; it varies, of course, with many factors such as sex, age, geography and race. At the Harlem Hospital,[1] New York City, cardiovascular syphilitic lesions constituted 3 per cent of a series of 1730 autopsies; at the Pathological Institute of McGill University and at the Royal Victoria Hospital, Montreal,[2] there was an incidence of 3 per cent in 7416 autopsies. In a series of 1000 autopsies at the University of Maryland,[3] 7 per cent of the cases were found to have syphilitic aortitis. Warthin's startling figures of 90 per cent involvement of the cardiovascular system in all cases of syphilis are already well known, even if not universally accepted. Such a variation of incidence shown by autopsy statistics is probably best accounted for by individual variations of pathological technic, as well as by racial and geographic differences in the sources of material studied. Although the true incidence of cardiovascular involvement is more likely to be discovered by the analysis of pathological data than by clinical studies, for reasons only too apparent, nevertheless a clinical study is more apt to reflect the occurrence of this complication as we meet it in our daily contacts with syphilis. Such a study was made of a series of 6253 cases of late and latent syphilis by the Cooperative Clinical Group.[4] They found that slightly less than 10 per cent had aortitis, aortic regurgitation or aneurysms. From a clinical study representing such a large number of cases and coming from such varied locations, it is reasonable to assume that this is about what we should expect in our daily routine.

In this day it is almost axiomatic that in the discussion of late complications of syphilis the most important therapeutic procedure is adequate treatment in the early stages. This holds true as much for cardiovascular involvement as for any other late sequel. There are already reported many studies which show the comparatively low incidence of cardiovascular damage in those who were well treated early as judged by modern standards of adequacy, in contrast with those who were not.

When, however, the signs of such involvement are present, we all recognize that they augur difficulties in the management of the case from that point on. It is at once obvious that if a patient is decompensated, the treatment must be that of general cardiac management without regard to the specific origin. This report is not concerned with such cases.

One of the many difficulties met with in the treatment of compensated patients is the tendency which the standard intravenous arsenicals possess to produce untoward reactions involving the vascular system. It is an indispensable condition that serious therapeutic reactions be avoided. This has been the principal barrier to the free use of arsenicals. There seems, however, to be a trend toward lowering this barrier. For example, last year an answer in "Queries and Minor Notes" in the *Journal of the American Medical Association*[5] to a question about the treatment of syphilitic aortitis advised that this was best treated conservatively with bismuth compounds and iodides over a long period of time before using arsenicals. This year, in answer to a similar query,[6] it was stated that treatment of all cardiovascular syphilitics, provided they were not decompensated, should be started with bismuth or mercury for at least a month before inaugurating one of the arsenicals. This is definitely less restrictive than the previous answer.

That the general tonic effect of an arsenical, as well as its more efficient antispirochetal action, would be desirable in these cases is only too evident. If, therefore, we could have such a preparation which also possessed a minimal shocking effect on the vascular system, it would be a valuable addition to our therapeutic equipment.

Such a drug is now available in the form of mapharsen, a preparation accepted by the Council

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From the Department for Diseases of the Skin, Boston City Hospital.

*Assistant visiting physician, Department of Diseases of the Skin, Boston City Hospital.

on Pharmacy and Chemistry of the American Medical Association. While the results from its use shown in the following report are favorable, they are based on a small number of cases, observed over a comparatively short period. Furthermore, the data are presented with full recollection of Stokes'[7] admonition at the Conference on Venereal Disease Control Work held in Washington last December. He warned against departing "from the established drugs and methods at the lure of each new discovery, each new sales campaign, or even any single authoritative appraisal." "A new arsenical," he said, "remains experimental for five years after its birth. . . . Its ultimate evaluation takes a decade and more, at least." With this in mind, it is not expected, or advised, that those who receive this report will rush to start injecting solutions of the drug into the veins of all syphilitic cardiacs. On the other hand, it is not entirely new; it was known and studied as long ago as 1912 by Ehrlich himself under the name of "arsenoxide."

In December, 1935, Foerster and others[8] reported extensively on the clinical use of mapharsen in 233 patients, of whom 151 had syphilis. Four of these had cardiovascular involvement and were treated without any reactions; the duration of treatment was not specified. In discussing this report Cole emphasized the absence of nitritoid reactions in his experience with the drug in 97 patients, as did Wile in his experience with a small group of congenital syphilitics.

In the report here presented, 28 men with cardiovascular syphilis were picked at random from the clinic at the Boston City Hospital and were treated with mapharsen provided especially for this study by the Massachusetts Department of Public Health. Their ages ranged from thirty-eight to sixty-seven. Eight were Negroes, whose average age was fifty-one; the average age of the 20 white men was fifty-seven. All had positive blood tests. In 16 cases the approximate interval between infection and the onset of cardiovascular *symptoms* could be determined with a fair degree of accuracy: it was twenty-two years in 6 Negroes and twenty-six years in 10 white men.

Antisyphilitic treatment prior to administration of mapharsen was as follows: 2 had received no other treatment; 5, bismuth alone; 5, bismuth and bismarsen; 11, bismuth and neoarsphenamine; 4, bismuth and tryparsamide; and 1, bismuth, tryparsamide and neoarsphenamine. Of the 12 who had previously received neoarsphenamine, 4 had no reactions and none to mapharsen; 6 had various reactions and none to mapharsen; 2 had slight nausea with both.

Not one of the 28 patients treated had a nitritoid reaction. Twenty-one had no reactions at all to mapharsen; 3 had slight nausea after one dose only, not recurring after subsequent doses, and 1 had slight nausea after two doses, not recurring after subsequent ones. One patient, who previously had blurring of vision with tryparsamide, had questionable increase in blurring with mapharsen. Two patients developed jaundice and toxic hepatitis; both recovered and 1 of these is now still receiving mapharsen with the assistance of sodium dehydrocholate according to the method described by Jankelson and me[9] in 1935. By this method the patient was able to receive mapharsen while still jaundiced, and made a quick recovery.

Three patients had aortic regurgitation, 3 had aortic aneurysms, and the rest had aortitis. All diagnoses were corroborated by teleroentgenograms and fluoroscopic examinations. In electrocardiograms, 13 cases showed myocardial damage. This was confirmed by history and physical findings. Five cases had positive spinal-fluid findings.

The clinical response to mapharsen is very interesting. Leaving out 4 patients who had less than six injections, there were 24 who received two hundred and eighty doses; 6 of these received twenty doses each. The size of the dose varied from 20 to 40 mg. Of these 24 patients, 1 developed an attack of grippe after the eighth treatment which kept him in bed several weeks; when he returned to the clinic he stated that he still felt weak, that the treatment had not helped him and that he desired a vacation from treatment. Another patient with aortitis and a positive spinal fluid test who had previously developed visual blurring with tryparsamide and a questionable increase in blurring after six doses of mapharsen, felt that he was no better so far as his cardiac symptoms were concerned. The other 22 patients all felt a definite improvement in their condition following treatment. The two most striking results were improvement in dyspnea on exertion and a general tonic effect, best characterized by such remarks as "I can now eat like a lion"; "I feel 100 per cent better"; "I don't feel so nervous and tired"; "The misery in my chest is gone." Their appetites generally improved, the chest pains diminished and in some cases disappeared, the fatigability of the lower extremities diminished and in several cases the heart fluttering sensation improved. Several were able to sleep with only one pillow, having previously required two or more.

The evidence of therapeutic effectiveness would admittedly be more conclusive if some criteria other than subjective improvement of symptoms could be produced. Although all but 4 of these patients have been under observation for a length of time averaging two and a half years (1 for only two months, and 3 for six, ten and eleven months respectively), they have unfortunately not received

this particular form of treatment for a length of time sufficient to produce objectively demonstrable changes. Such changes take place so slowly that they can be graphically elucidated only with difficulty and after a long time. These studies are being continued with the hope of reaching a more impressive opinion embodying such observations.

As has been stated, the number of cases observed is admittedly too small for drawing far-reaching conclusions; the purpose of this preliminary report is merely to point out that there is promise, in this recently reintroduced drug, of a valuable agent to combat cardiovascular syphilis.

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Discussion

Dr. Francis M. Thurmon, Boston: Dr. Appel has stated that his 28 cases of cardiovascular syphilis tolerated mapharsen very well. Yet, he has cautioned us not to administer mapharsen heedlessly to all cases of cardiac syphilis. We all know the seriousness of untoward reactions in cardiovascular involvement; therefore, any drug of the arsenical series that is therapeutically efficacious and which can be given with a minimum degree of toxic reaction is of considerable value. The question arises, Is mapharsen a preparation of this type? Dr. Appel states that it is. My own experience with mapharsen verifies his statement. In the Skin Clinic of the Boston Dispensary we have been using mapharsen for three years. In a series of 215 patients in the various stages of syphilis a total of 3098 treatments with mapharsen has been given. In this group there were 9 patients with cardiovascular involvement. They have received a total of 172 treatments with mapharsen. Eight tolerated the drug well; 1 did not.

In this group of 215 patients the maximum dose of mapharsen was 40 mg. for the females and 60 mg. for the males. The usual interval between injections was seven days, with the exception of primary and secondary syphilis where the clinic routine calls for three injections a week for the first two weeks, two injections a week for the second two weeks, and one injection a week in uncomplicated cases thereafter, alternating intravenous and intramuscular treatments in blocks of twelve injections, respectively.

Of these 215 patients there were 67 who proved intolerant to one or more arsenicals (arsphenamine, neoarsphenamine, silver arsphenamine, sulpharsphenamine, tryparsamid, bismarsen) but who did tolerate mapharsen either without toxic effect or with transient insignificant manifestations which did not interfere with its administration. This experience bears out Dr. Appel's statements.

In contrast to this there were 19 patients who manifested untoward reactions to mapharsen (nitritoid, dermatitis, hepatitis with icterus, papilledema) which were sufficiently severe to merit a discontinuance of the drug. It is this group that gives emphasis to Dr. Appel's admonition not to administer mapharsen thoughtlessly to all patients with cardiovascular syphilis.

Our experience with mapharsen in 9 patients with cardiovascular syphilis closely coincides with the statements of Dr. Appel. Their ages ranged from twenty-one to fifty-six years. There were 5 males and 4 females. Seven had aortic involvement — 1 with insufficiency and aneurysm, 3 with insufficiency, and 3 with aortitis alone. Two had cardiorenal disease with hypertension. One patient, a female, aged fifty-three years, severely decompensated, could tolerate only two treatments with mapharsen; while the other patient, a female, aged forty-nine years, tolerated twelve treatments with mapharsen without untoward effect. The patient with aortic aneurysm and insufficiency received a total of thirty-six treatments without a toxic manifestation. Three patients who previously had experienced severe reactions to one of the other arsphenamines tolerated mapharsen without reaction.

Such observations as these make it possible for me to concur most heartily in that which Dr. Appel has said regarding mapharsen.

Dr. John G. Downing, Boston: I believe that while mapharsen may be of value for use in large clinics, we are not ready as yet to accept it as a proved arsenical in private practice, or for recommendation to the general practitioner. When one can see, as I have seen, in a period of four months, 1 case of dermatitis exfoliativa and 4 cases of jaundice following the use of mapharsen, it is still to be recommended rather carefully.

Dr. Bernard Appel: I should like to leave with you a slightly more cheerful note than has been implied by some of the previous speakers as to the treatment of patients with no clinical picture except a positive blood test. We have received this morning considerable evidence warranting a somewhat more optimistic attitude. The case which Dr. Morrison showed, the young woman with an enormous aneurysm which improved under treatment, is certainly in itself dramatic evidence that it is not useless to treat cardiovascular syphilis when it has reached the stage of aneurysm.

The insidious onset of cardiovascular syphilis, as shown by the long interval of time which elapses from the date of infection until the development of symptoms, is in itself a further argument for continuing the treatment in patients with a history of syphilis but having only a positive blood test. This is in contrast to the implication by previous speakers that it may not be advisable to treat a patient because he has a positive blood test only and no other signs. Dr. White brought out that there was a positive history of syphilis in only 18 per cent of those dying from syphilis of the cardiovascular system; this is another piece of evidence which emphasizes the necessity for more rather than less continued treatment in patients showing no apparent symptomatology.

Due consideration must of course be given to the individual, and it is almost too obvious that it is not advisable to treat by rote or schedule. The patient is not a walking test tube whose positive reactions must be blasted out, come what may. But in the treatment of cardiovascular syphilis somewhat more vigor than has been displayed in the past is indicated today.

TUBERCULOUS PERITONITIS IN CHILDREN

LEE D. VAN ANTWERP, M.D.*

MERIDEN, CONNECTICUT

SURPRISINGLY little about tuberculous peritonitis is found in recent literature, and the opinions expressed as to the seriousness of the condition vary considerably. Although the material on which this paper is based is not extensive, it represents the accumulated cases of sixteen years occurring in a state sanatorium for tuberculous children. It is probable that nearly all children in Connecticut diagnosed as having tuberculous peritonitis find their way to this institution provided they survive the waiting period, which varies from a week to three months. Our figures, therefore, may be considered reliable for estimating the incidence of the condition in children in this State.

This institution opened in May, 1920, and we have since then admitted 3125 patients. Of that number, 37 have been diagnosed as having, or as being convalescent from, tuberculous peritonitis. In addition, 4 patients who were under treatment for tuberculous lesions elsewhere in the body developed peritonitis while under our observation, making 41 cases in all. These last 4 cases probably offer the most reliable data as to onset of symptoms and clinical course, and they will be described in detail.

ETIOLOGY

The entrance of the organisms into the peritoneal cavity must, of course, always be secondary to some other focus of infection since the peritoneum is a closed sac. Borschke[1] found a possible source of primary infection in all but 2 of 226 cases; and as it is a common experience to fail to find a primary focus which explains a positive tuberculin skin test, his failures cannot be taken as evidence of the absence of such a focus.

The peritoneum is invaded by various routes: (1) hematogenous, (2) lymphogenous, (3) by contiguity, or (4) by rupture of tuberculous foci in the abdominal organs. There are rare and unusual cases such as Fishberg's,[2] in which it was discovered at autopsy that peritonitis had resulted from a small perforation of the diaphragm which allowed pus to enter the abdomen from a pyopneumothorax. In the first group the commonest cases are associated with miliary tuberculosis, but there can be no doubt that they also result from a blood-stream infection of a degree of virulence insufficient to cause general and widespread manifestations of the disease. In the group caused by the lymphogenous route are cases of tuberculous enteritis in which the infection follows the lymph channels to the mesenteric nodes; from there it spreads to the abdomen by contiguity or by rupture of the nodes. This route of spread has been demonstrated by Crawford and Sawyer,[3] who found 29 such cases at autopsy. In this group also are the cases in which the route of infection must have been by way of the lymphatics of the diaphragm from the pleural cavity or from the pericardium.

In the third group a tuberculous peritonitis may result from contiguity to a contained organ, most usually the intestines, but frequently also from the adrenals or kidneys, after they have themselves become infected by other routes. Such cases usually show only a localized involvement of the peritoneal cavity. This local involvement may, however, spread and result in a generalized peritonitis.

The fourth group of cases are those which develop as the result of ruptured tuberculous foci in the involved organs, usually the intestines.

CALCIFIED MESENTERIC LYMPH NODES

Any discussion of tuberculous peritonitis should include the subject of calcified lymph nodes that are seen in x-ray films of the abdomen. These x-ray findings are more and more coming to be considered as almost pathognomonic of a healed or healing tuberculous infection in the mesenteric lymph nodes. They are also usually considered to be a part of the picture of tuberculous enteritis. The subject of calcified lymph nodes is covered in a paper from this institution by Gibson.[4]

The importance of including this subject here is the necessity of bearing in mind that a peritonitis may complicate such a condition, either by contiguity from the intestinal wall or by rupture of caseous abdominal lymph nodes. In those patients who have clinical peritonitis and who show by x-ray calcified mesenteric nodes, the sequence is probably either enteritis, adenitis and peritonitis, or a peritonitis from other routes which drain to the regional nodes, which in turn tend to heal, as demonstrated by the deposit of calcium. It is our observation that in patients in whom the peritonitis is known to exist prior to such calcification of the nodes, this calcification comes late in the course of the disease, usually some months or even years after the abdominal symptoms have subsided.

Read at a meeting of the staffs of the Connecticut state sanatoriums at Undercliff Sanatorium, Meriden, Connecticut, March 1, 1937.

*Senior staff physician, Undercliff Sanatorium.

ANALYSIS OF CASES

We have admitted to this institution 41 cases of tuberculous peritonitis. Of this number, 3 are eliminated from our study because of having left against advice within ten days of their admission. Of the 38 remaining cases, 15 were male and 23 female. They are divided racially among the boys thus: 7 white and 8 colored; among the girls, 9 white and 14 colored. Their ages varied as follows:

Age	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Boys																	
White	1	1	2					1		1		1					7
Colored					1	2	2	1					1			1	8
Girls																	
White	2	2	1			1					1	2					9
Colored				1	2	2	2	1	2			1	1	1		1	14
Total	3	3	3	1	3	5	4	3	2	2	2	2	2	1	0	2	38

It is interesting to note that in our series, 15 patients, or 39 per cent, had had abdominal surgery. Of this number nearly all had had laparotomies for diagnosis or had been brought to surgery through an erroneous diagnosis. The remaining 23 were diagnosed on history and physical examinations.

Of the symptoms presented, the commonest was distention, found in 22 cases. Abdominal pain was the next commonest, found in 16 cases; the third was fever, in 10 cases. Loss of weight was noted in 9, tumor in 8, weakness in 5, diarrhea in 3, anorexia in 2, vomiting in 1 and constipation in 1.

Of these symptoms the most interesting and the most difficult to explain is that of tumor. Such tumors varied in size from that of a large grapefruit to those barely palpable. They were usually nodular and therefore were most likely hypertrophied lymph nodes and matted omentum. In 2 cases, however, they were smooth, rounded and relatively firm. One of the latter was found in a patient who had a fecal sinus which had developed in an operative wound. It may have been cystic and connected with the gut, since pressure on it caused fecal material to be extruded from the sinus. The other was in a patient who developed his peritonitis while under our observation. This tumor was as large as a grapefruit and was in the midline. It caused no symptoms, and was present and unchanged in size for nine months. It then became smaller over a period of three months and disappeared. The first of these 2 patients died, but no autopsy was obtained. The second was discharged as apparently cured, so that in neither case was there an opportunity to investigate the tumor.

Tuberculous peritonitis, when not complicated by other tuberculous lesions, is infrequently considered as a particularly serious condition. This is not borne out by analysis of our series. Of the 38 patients presented there were 6 with serious constitutional complications, all of whom died. These complications were as follows: Pott's disease with paravertebral abscess and draining sinuses in a seven-year-old colored boy; the adult type of pulmonary tuberculous lesions in 2 colored girls, aged nine and ten, and 2 white girls, aged eleven and twelve; miliary tuberculosis in 1 six-year-old colored girl.

In addition to these deaths in patients who had complications, there were 9 deaths in patients with no more serious complicating factors than a regressing primary infection. Three occurred in white boys, aged two, three and thirteen; 3 in colored boys, aged seven, eight and fourteen, and 3 in colored girls, aged five, seven and fourteen. These 9 represent 28 per cent of all uncomplicated cases, and there is a total mortality of 40 per cent in all cases, complicated and uncomplicated.

The time between the onset of symptoms and death varied widely: among the boys from three to fifty-two months, with an average of seventeen months; among the girls from nine to twenty months, with an average of fifteen months. Only 1 had a terminal complication — meningitis developing two weeks before death.

PATIENTS DEVELOPING PERITONITIS AFTER ADMISSION

In 4 of our patients peritoneal symptoms developed after their admission and while under our care for other tuberculous lesions. In this group we find the most reliable information regarding onset of symptoms.

Case 1. This patient, an 8-year-old colored boy, with Pott's disease and a paravertebral abscess with a draining snius, showed on entrance a moderate distention of the abdomen but nothing else which suggested peritonitis; nor was there anything in his history to suggest such a diagnosis. The x-ray films of his chest demonstrated the paravertebral abscess and a hilar nodulation, which was interpreted as regressive primary disease; the parenchyma of the lungs was normal. The first signs suggestive of peritonitis were distention of the abdomen, tympany and the development of a hard, non-tender, oval mass about 12 by 7 cm. in the left lower quadrant. Two weeks later he ran a temperature of from 100 to 103°F.; his distention continued, but there was no evidence of fluid. Shortly after this, he developed a right inguinal adenitis, and these glands broke down and drained. From this time on he failed generally, the drainage from the sinuses continuing, and he died about 13 months later. No further signs or symptoms of peritoneal involvement, however, were shown.

Case 2. This patient was a 9-year-old colored boy admitted with lobar pneumonia and a regressing primary tuberculous infection. His Wassermann was negative but he had a 3+ Kahn, which became negative under

treatment. He recovered from his pneumonia satisfactorily, leaving only his basic diagnosis of a regressing primary pulmonary tuberculosis. Five months after admission he developed abdominal distention with tympany but without demonstrable fluid or masses. A diagnosis of peritoneal tuberculosis was made. At this time he developed a second intercurrent illness, diagnosed as lobar pneumonia. He recovered from this attack of pneumonia, but his abdominal distention remained and the abdominal percussion note became dull, though there was no other evidence of fluid. Four months after the onset of distention there appeared in the central part of the abdomen a cystic mass, smooth and non-tender, and the size of a large grapefruit. The patient still had no pain, and there was no evidence of free fluid. Nine months after the appearance of the mass it began to decrease in size, but there was no change in signs or symptoms. Three months later (12 months after appearance) it was barely palpable, and shortly afterward it disappeared, as did all other signs and symptoms. He was discharged as apparently cured 4½ years after the first abdominal symptoms appeared. A film taken before discharge did not show any calcification within the abdomen. The picture of tuberculosis in this patient is somewhat clouded because of the intercurrent attacks of pneumonia, but it is our feeling that the latter were not caused by a tuberculous infection. This opinion is based on the clinical course and the rapid clearing of the pulmonary lesions as shown by x-ray.

Case 3. This patient was a 7-year-old colored girl, admitted with a diagnosis of regressing primary pulmonary tuberculosis. There was nothing which suggested peritoneal involvement. Three months after admission she began to run a fever between 99 and 103°F.; her abdomen became distended and a fluid wave was demonstrated. At this time she had no subjective complaints, but 2 months later she began to complain of severe colicky pains in the abdomen. Oxygen was injected into the peritoneal cavity, with some relief. The fever, fluid and attacks of pain continued; she failed continuously but slowly, and died 5 months from the first appearance of the abdominal signs.

Case 4. This was a 9-year-old colored girl with an admission diagnosis of regressing primary pulmonary tuberculosis and a quiescent tuberculous keratoconjunctivitis. There was nothing to suggest peritonitis. Four months later her temperature rose to between 100 and 101°F., and this elevation continued. Two months later she showed a slight loss of weight and began to complain of abdominal distress. At this time her abdomen was slightly distended and tympanitic, but there was no tenderness, masses, or evidence of fluid. An abdominal film showed several small calcified shadows in the pelvis. In this film was seen a ground-glass mass above the pelvic brim, occupying the lower half of the abdomen. A lateral position x-ray showed this same shadow along the posterior half of the abdomen with distended intestines anterior to it. From this point on the patient failed progressively and died 6 months after the first abdominal signs.

These four patients did not show any one symptom or series of symptoms which were of much aid in early diagnosis. We feel that, because of our unusual chance of watching the development and progress of the peritonitis from its onset, the presentation of these cases in detail is worth while, though the series is small.

PATHOLOGY

In cases of peritonitis occurring as a part of a generalized tuberculous infection of the miliary type, the peritoneum will be found studded with miliary tubercles. When fluid is found, it is usually small in amount, and blood-tinged. The small amount of fluid in these cases is perhaps explained by the fact that a survival beyond a few days from the onset of the generalized infection is rare

In other types, caused by less virulent hematogenous infections and infection by other routes, the peritoneal involvement may be widespread or localized. Varying quantities of fluid are found, and the amount varies both in cases with a localized and in those with a widespread peritoneal involvement. The fluid may be serous, serofibrinous or occasionally purulent. When the fluid is fibrinous, thick, matted adhesions are apt to form and frequently result in constipation. The physical sign of tumor is probably caused by these adhesions.

Tuberculous foci in the organs contained in the peritoneal cavity frequently occur, and the rupture of such an area may be the precedent factor in peritonitis of this type.

TREATMENT

There is no general agreement by all observers in regard to the treatment of these cases. In general it may be said to be supportive and palliative. Supportive treatment consists of such general items as bed rest, a well-balanced diet, sunlight and good nursing care. Palliative treatment consists mainly of aspiration of fluid when indicated for the patient's comfort, and treatment for constipation or diarrhea as indicated. In addition, there is some enthusiasm in the recent literature for calcium therapy as an aid toward resorption of serous fluids, and this is probably worth a trial, although our experience with it in cases of peritonitis is so limited as to deny us an opinion.

There is a well-fixed notion that beneficial results often follow opening the peritoneum, with aspiration of the fluid and exposure of the intestines to light and air. We have seen no complete report of such a series, but since we know that the tubercle bacillus is an obligatory aerobe, it is more reasonable to assume that the absence of oxygen in the abdominal cavity would have a tendency to prohibit its growth, and conversely that the admission of oxygen would tend to encourage growth. The introduction of oxygen or other gas into the abdomen very often gives relief from pain in cases where it is a prominent symptom, but this is probably a mechanical factor, as indicated by the fact that relief when obtained is almost immediate, and when the gas is absorbed the symptoms return.

Striking relief is seen at times, and the procedure is well worth trying in the interest of the patient's comfort.

PROPHYLAXIS

Prophylaxis against a complicating peritonitis is important, and in the light of our experience, which shows a 100 per cent mortality in complicated cases, it must be given serious consideration. In all patients with a positive sputum, carelessness will result in the swallowing of considerable numbers of tubercle bacilli. Given the factor of a low fecal motility in the intestines, it is most reasonable to suppose that enteritis may result and that peritonitis may follow in a fair percentage of such patients. It seems highly advisable, therefore, to warn patients emphatically against swallowing sputum and in addition to correct in them any tendency to constipation. These prophylactic measures cover but one of the routes of admission to the peritoneum, but this is the only one which is at all under the control of the patient and the physician.

SUMMARY

1. A series of 38 patients, at a state institution for tuberculous children, who were diagnosed as having tuberculous peritonitis, is presented.

2. Of this number, 6 had serious complications which resulted in a 100 per cent mortality.

3. Of the 32 patients without such complications there were 9 deaths — a mortality of 28 per cent.

4. In 4 patients peritoneal symptoms developed while under care for other tuberculous lesions, and their histories are presented in detail.

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D.

TRACY B. MALLORY, M.D., *Editor*

CASE 23501

PRESENTATION OF CASE

A forty-eight-year-old German-American housewife entered the hospital complaining of weakness, cough, dyspnea and jaundice.

About one or two years before entry the patient began to notice dyspnea on exertion, easy fatigability and for the past eight months ankle edema. Also at that time she had attacks of epigastric pain which were relieved by food and soda. The dyspnea on exertion gradually increased in severity and she began to have attacks of nocturnal dyspnea and "bronchial" cough. About six months before entry the attacks of abdominal pain stopped completely. A month later she developed a "sore" on her right eyeball. She went to a hospital and blood tests for syphilis taken at that time were positive. She was given weekly intravenous injections of neoarsphenamine for five weeks, up to three and a half months before entry, when they were stopped because of weakness. During that period she had rapidly become weaker and had lost weight, strength and appetite. This continued until a month before entry, when her cough increased. There was complete loss of appetite. She also began having frequent attacks of nausea and occasionally vomited, and was advised to enter a hospital. Two weeks before entry her urine seemed darker than normal, and a week before entry her husband noticed that her skin was yellow. The jaundice gradually increased, and she became extremely weak, drowsy and dyspneic. She had clay-colored stools for a week.

For the past three years the patient had been drinking about two to four highballs and two glasses of beer a week.

Physical examination revealed a well-developed and nourished, drowsy woman breathing heavily and rapidly with a slight grunt but lying flat in bed. The skin and sclerae were slightly icteric. The neck veins were not distended but there were marked pulsations in the neck, and the nailbeds were slightly cyanotic. There were dilated veins over the chest and back. Her nose was somewhat flattened, and there was a large perforation of the septum. The lungs showed moist rales at both bases, and there were some dulness and increased breath sounds in the left axilla. The heart was enlarged to the left, 12 cm. from the midsternal line. The supracardiac dulness measured 7 cm. There was a very rough murmur, maximal in the aortic area, transmitted over the entire precordium, to both axillae, to the back and especially to the neck. Accompanying the murmur was a thrill, maximal at the base and transmitted to the right side of the neck. Two observers thought the thrill and murmur were systolic, and one thought it was diastolic. One observer heard a short, rough, blowing diastolic murmur following the second sound in the aortic area. A_2 was not accentuated and was weaker than P_2. A murmur similar to that heard in the heart was heard over all the peripheral arteries. The blood pressure was 100 systolic, 50 diastolic. She had a Corrigan pulse, and capillary pulsation was observed. The venous pressure was 100 mm. of water. The liver could be palpated down to the umbilicus, and its edge was sharp and slightly tender. The spleen was not palpable, and there was no peripheral edema. There was a large ecchymosis beneath the left eye, and many smaller ecchymotic and purpuric areas were distributed irregularly over the body. There were some spider telangiectases on the chest.

The temperature was 103.5°F., the pulse 135. The respirations were 38.

The urine was brown in color, had a specific gravity of 1.020, and contained a slight trace of albumin, 3+ bile and a few bile casts. The blood showed a red cell count of 3,020,000 with 65 per cent hemoglobin. The white cell count was 13,950, 74 per cent polymorphonuclears. Two guaiac tests on the stools were negative and 2+, respectively. One stool was clay colored, another light brown. A Takata-Ara test was negative. Two blood Hinton tests and one Wassermann test were positive. A lumbar puncture showed normal dynamics. The spinal fluid contained 5 lymphocytes and 1 polymorphonuclear cell per cu. mm. and had a total protein of 20 mg. per cent, a sugar of 62 mg. per cent, a goldsol curve of 0000000000 and a negative Wassermann.

A portable x-ray film of the chest showed diffuse congestion of both lungs, enlargement of the heart to the left, and a markedly dilated and tortuous aorta.

She became weaker and more dyspneic and died on the third hospital day.

DIFFERENTIAL DIAGNOSIS

DR. WYMAN RICHARDSON: I shall start with the assumption that this patient had syphilis. I am going to discuss the case first from an anatomic point of view. To begin with the central nervous system, we can say that the patient did not have evidence of syphilis of the central nervous

system, although there were a few more cells in the spinal fluid than normal, and we rule it out.

We come to the thorax. The patient had symptoms referred to the thorax — nocturnal dyspnea and cough. The signs on physical examination indicate a lesion in the region of the aorta, or the aortic valve, and we may pause for a moment to decide which of the observers we are going to believe. Certainly the peripheral signs are definite and indicate a significant aortic regurgitation. The loud, rough murmur is presumably systolic, at least most diastolic murmurs are not described as rough. The murmur is transmitted in almost every direction along the arterial system. There is some evidence of mediastinal obstruction as evidenced by dilated veins, and one might interpret the increase in venous pressure on this basis, although that could also be due to failure of the heart. One can say, therefore, that the evidence is rather definite that the patient had syphilitic aortitis, and I believe that there is aneurysmal dilatation of the aorta. I do not see any good reason for bringing in other cardiac diagnoses.

We will look at the x-ray films.

X-Ray Interpretation

Dr. Aubrey O. Hampton: This is a portable film. The supracardiac shadow is magnified and in addition exaggerated by rotation. It is projected at about its maximum diameter. The diaphragm is very high on both sides, which would also exaggerate the supracardiac shadow, and I must say that I am not quite so much impressed by it as the one who interpreted these films. I am not so certain there is passive congestion of the lungs or that the aorta is markedly dilated, and I am not even certain that the heart is enlarged. The arch of the aorta does appear somewhat dilated, but on this type of examination I do not think it is possible to be certain of it.

Differential Diagnosis (Continued)

Dr. Richardson: Dr. Hampton does not help us very much, but in view of the clinical symptoms and of the possibility of dilated aorta, I think we are still justified in saying that she has syphilitic aortitis, and I shall say that she presumably has an aneurysmal dilatation as well which cannot be demonstrated in a portable anteroposterior film. We can say that there is no gross lesion in the lung field. She certainly had heart disease, but regardless of whether we say it is syphilitic, it does not appear that she died a cardiac death. If it is syphilis, one would expect that she would die a sudden anginal death, an equally sudden death from rupture of the aorta, a death due to mediastinal obstruction, or a death from cardiac failure; but the picture is not that of a patient dying of cardiac failure, nor is it that of a patient dying with mediastinal obstruction. There is not enough in the chest to account for this patient's death.

Let us consider the abdomen. She has a big liver and a jaundice that appears to be obstructive. Could it be a cardiac liver — cardiac cirrhosis? I do not believe so. The spleen is not palpable; it should be if there was any marked degree of passive congestion. There is no other evidence of passive congestion, and I rule it out. Syphilis of the liver usually would run a much longer course. One would not expect to find a big, smooth liver, but one might be fooled. Furthermore, you will note that in spite of fairly adequate antiluetic treatment the patient went steadily downhill. I see no need to talk about gallstones; there is no evidence, although she might have had obstruction from a gallstone which was not causing pain. The jaundice came on too late to be due to an arsphenamine hepatitis. Yet, there is something causing a big liver, presumably with obstruction of the bile ducts. The history and one clay-colored stool suggest that it is an obstructive jaundice. If she is dying with marked liver failure this will account for the ecchymoses and purpura.

I should like to go over the story again briefly, forgetting about syphilis and thinking of the symptoms that have to do with the gastrointestinal tract. It is a story beginning about one or two years ago with dyspnea, cough and epigastric pain. Six months before entry the abdominal pain stopped abruptly. That is an interesting symptom. I am not quite certain as to the reason for it. Then she gradually became weaker, lost strength, weight and appetite, with finally complete loss of appetite. She had frequent attacks of nausea and vomiting, and then two weeks before entry jaundice appeared. If one were given these symptoms without any others, one could not help making a diagnosis of abdominal malignancy, and presumably carcinoma of the stomach. The pain that disappeared completely is difficult to interpret. Possibly she had an incidental ulcer. You will notice that the pain stopped before she had syphilitic treatment. It could not be the result of treatment for syphilis.

I am going to take the story as I gave it to you and disregard syphilis as the cause of death. I am going to say that the patient died of carcinoma of the stomach with metastases to the liver and obstruction of the biliary tract. I am going to say that she had syphilitic aortitis, with aneurysmal dilatation, and possibly a terminal bronchopneumonia, which probably is not important. I meant to mention one other thing, that is, the question of bacterial endocarditis on top of a syphilitic lesion. It does not occur very often and I cannot

say that it would explain anything in this picture. I mention it to rule it out.

Dr. Tracy B. Mallory: I should like to ask Dr. Jones a question in regard to the time when evidence of hepatitis appears in relation to arsphenamine treatment.

Dr. Chester M. Jones: I cannot answer the question. I formerly thought I knew something about it; I have changed my views. I think that most people would agree with what Dr. Richardson remarked, that three and a half months is longer than one would expect a case to go without demonstrable evidence of hepatic insufficiency. I am not sure that such is true, however. Cases have come to our attention in the past few years which have gone three or even four months between the cessation of arsphenamine treatment and the appearance of jaundice. In most of these cases arsenic had been given up to a certain point and then bismuth for a few months before the patient came in with jaundice. We have wondered if bismuth played a role, but if so, I do not know what the effect is. Certainly we cannot prove its significance.

Dr. Jacob Lerman: I saw this woman before she entered the hospital. It was my impression that she had syphilitic heart disease. I am probably responsible for the description of the murmurs and should like to correct that of the diastolic murmur. It was blowing, not rough. I agree with Dr. Richardson that there was dilatation of the aorta with regurgitation and stenosis. The patient was obviously very sick and deeply jaundiced. I felt that the jaundice was due to the delayed effect of arsenic administration — arsenical hepatitis. I have seen several patients in the Skin Department with hepatitis developing three or four months after treatment. On going over the literature one finds fairly definite agreement among writers that arsenical hepatitis, in most cases, comes on either soon after the injection of arsphenamine or from three to four months later. Therefore, it seemed to me that this patient belonged in the category of delayed arsenic hepatitis plus some secondary infection. It was not clear whether the infection was in the lungs or in the heart.

Dr. Jones: There was a comment in the history about telangiectases. While they are not diagnostic of liver disease, they always make me think of intrahepatic disease rather than malignancy. We see them in cirrhosis and in no other disease.

Dr. William D. Smith: I should like to ask Dr. Lerman how he could make a diagnosis of syphilitic aortitis and also of aortic stenosis.

Dr. Lerman: All I can say is that the signs were those of aortic stenosis. The murmur was the loudest and the thrill the roughest I have ever observed.

Clinical Diagnoses

Cardiovascular lues with aortic regurgitation.
Acute hepatitis and cirrhosis.
Bronchopneumonia.

Dr. Richardson's Diagnoses

Syphilis.
Syphilitic aortitis with aneurysm.
Carcinoma of the stomach.
Metastases to liver.

Anatomic Diagnoses

(Syphilis.)
Hepatitis, acute.
Ascites.
Anasarca, generalized, slight.
Syphilitic aortitis with aneurysm and with extension to aortic commissures.
Miliary tuberculosis.
Tuberculosis of adrenal.
Duodenal ulcer, healed.

Pathological Discussion

Dr. Mallory: The autopsy substantiated the first part of Dr. Richardson's diagnosis, but not the last. The patient did have syphilis and it had taken the form of a very marked aortic involvement. She had a large aneurysm of the aorta which extended down to and involved the mouths of the coronary arteries and to a very slight degree the aortic valve itself. The heart was not hypertrophied, however. So I do not believe that any element of heart failure ever entered the picture. The aortic valve showed a little separation of the commissures. That would be sufficient to produce a diastolic murmur and also to explain the somewhat large pulse pressure and other peripheral signs of aortic regurgitation. The valve ring was normal in size and certainly not stenotic. We have had other cases of syphilis of the heart with all the clinical and physical signs of aortic stenosis, but none of them have ever shown stenosis. Those cases, as in this one, have shown sudden ballooning of the aorta just above the valve so that it was not unreasonable to assume that the valve, even if it had a normal circumference, was relatively stenotic in proportion to the size of the aorta.

The other most striking finding at the autopsy was the liver. It was very large, weighing 3700 gm., of an extraordinary pale yellow color, with a round edge. I have never seen anything quite like it. On microscopic examination it showed an extremely acute grade of toxic hepatitis. It was presumably the initial stage of hepatitis that would later lead on to atrophy. Patients very seldom die

of toxic hepatitis in this initial and rather transitory hypertrophic stage, so that it is not surprising that we found still an additional factor which was responsible for death. I think that all of you will have to grant that it was completely undiagnosable. She had massive tuberculosis of one adrenal and diffuse miliary tuberculosis, which I think is what killed her. It is interesting that she had an obvious scar of a healed duodenal ulcer, which would account for the transitory gastric history.

A PHYSICIAN: Did she have miliary tuberculosis of the liver?

DR. MALLORY: There were a few tubercles in the liver but many more in the other organs. I cannot believe that tuberculosis could explain the severe hepatitis. My inclination would be to tie it up with the arsphenamine. We certainly have had four or five cases of hepatitis in the past few years in which jaundice appeared several months after the last of a series of arsphenamine injections.

A PHYSICIAN: Do you think it would have been possible for her to have taken alcohol in larger quantities than given in the history, and would that be a possible explanation for the hepatitis?

DR. MALLORY: I think that is worth considering. We know that alcohol will reinforce the toxicity of a number of substances that do injure the liver, and even doses as small as this taken simultaneously with the arsphenamine treatment might have an effect. Certainly such a synergistic action has been proved so far as alcohol and carbon tetrachloride are concerned.

DR. RICHARDSON: In regard to Dr. Jones's remarks, I should like to have the fact brought out that this patient received no bismuth or other heavy metal after arsenic was stopped. I still think it very unusual to have toxic hepatitis due to arsenic so long afterward, when no other heavy metal has been given in the interval.

CASE 23502

PRESENTATION OF CASE

A seventy-one-year-old, white, male railroad conductor entered the hospital complaining of abdominal pain and vomiting of four hours' duration.

About two hours after eating a lunch of fried liver and corn he began to experience abdominal pains of a crampy nature which centered around his umbilicus. The pain gradually increased in intensity. He had a normal bowel movement, which gave him no relief, and shortly afterward had a loose watery bowel movement. He took two doses of soda in water with resulting gaseous eructations. Finally, about two hours after the onset of pain he vomited twice, which afforded him some relief. The vomiting was followed by profuse perspiration and a shaking chill lasting about twenty minutes.

He had had no previous attacks although for ten years he had had indigestion after eating fried foods. He had had no other gastrointestinal symptoms, but had had some nocturia and frequency of urination. For many years he had had a small umbilical hernia which he could always reduce with one finger. He used a small belt to keep it in place. He had an attack of pneumonia about a year before entry. His family history was negative.

Physical examination revealed a moderately obese, elderly male in no acute discomfort. The heart and lungs were negative, and the blood pressure was 127 systolic, 62 diastolic. The abdomen was moderately distended, held somewhat tense, but without any involuntary spasm. There was marked tenderness around the umbilicus and there was a small umbilical hernia which could not be reduced; however, coughing caused increased bulging of the hernia. There was questionable tenderness in the right lower quadrant. Peristalsis seemed to be about normal, perhaps slightly diminished. No masses could be made out. Rectal examination was unsatisfactory because of very tender hemorrhoids. The prostate was somewhat enlarged and firm.

The rectal temperature was 102.4°F., the pulse 88. The respirations were 44.

The urine examination was negative. The blood showed a white cell count of 18,000.

An operation was advised but was refused by the patient. Twelve hours later the temperature was 99°F., and the white count 28,000 with 84 per cent polymorphonuclears. Otherwise his condition was about the same. He was not suffering any pain, and peristalsis was normal. Eight hours later the abdomen appeared to be slightly more distended. A slight icteric tint of the sclerae was noted. Gastric lavage was done, and no backing-up of fluid was found in the stomach. Twenty-two hours after admission an appendectomy and Mayo repair of an umbilical hernia were performed. On that day the van den Bergh was 1.5 to 2 mg. per cent indirect, the nonprotein nitrogen 28 mg. and the blood protein 5.8 gm. per cent. The blood chlorides were equivalent to 102 cc. of N/10 sodium chloride. A culture of the abdominal cavity taken at the time of operation showed *Bacillus coli*.

On the day after operation the temperature rose to 100.5°F., and his respirations became more rapid. However, there were no signs in the chest, the abdomen was soft, and peristalsis was active. Two days later, on the fifth hospital day, he began to have severe hiccoughs. His abdomen became

greatly distended, with absent peristalsis, but no pain. Gastric lavage yielded 1800 cc. of dark fluid, and he was put on Wangensteen suction with a constant intravenous drip of glucose solution. That afternoon he was more comfortable, and peristalsis again became audible, although the distention persisted. By that time the white count had fallen to 12,400, and the abdominal wound appeared to be healing well. On the ninth day the blood showed a nonprotein nitrogen of 32 mg. per cent, a protein of 5 gm. per cent and a van den Bergh of 3.75 mg. per cent biphasic, and the chlorides were equivalent to 104 cc. of N/10 sodium chloride. On the following day the temperature rose to 103°F. and the pulse to 130, but the respirations remained at 25 or 30. No new signs appeared in the chest, and the condition of his abdomen remained about the same. It was not tense, and occasional gurgles of peristalsis could be heard. The temperature remained elevated, and on the eleventh day definite signs of pneumonia could be made out at the right base. By that time peristalsis could no longer be heard. He died the following day.

Differential Diagnosis

Dr. James E. Fish: As I read over this history there are two things that I call "fingerprint symptoms." They definitely help to identify an organ or a system where we can at least start looking for the trouble. The first is jaundice, and I feel that in this instance it points to biliary tract involvement. The other sign is the fact that *Bacillus coli* was cultured from peritoneal fluid taken on the day of operation. That brings to my mind three main questions. In the first place, Why did he have a peritonitis? Secondly, Why did he develop jaundice? Thirdly, Was the jaundice an initial symptom or was it a complication of some more remote process? As for the remaining signs and symptoms, it seems to me they are most like a toy weathervane. They will point in any way you push them and you can push them to indicate almost anything inside the abdomen.

Let us go back and review the evidence. We are led to believe that he had been perfectly well during the year before entry except for nocturia and for some intolerance to fats. He may have had a gallstone, but probably not a gall bladder full of little stones. He certainly has not had a history of repeated attacks of cholelithiasis. Certainly there does not seem to be anything in the history to make us think of a chronic or wasting type of disease. For an acute episode in a man who is supposed to have been quite well there would seem to me to be several possibilities.

In the first place, there is the possibility of a mechanical difficulty, such as hernia. Other things in favor of hernia's causing the symptoms are the facts that he has an incarcerated lump at the umbilicus, that he has tenderness, distention, and crampy small-bowel type of pain and that a hernia which has formerly been reducible now refuses to be reduced — possibly just the "cussedness" of hernias. Against these facts we note that on coughing the hernia bulges, and therefore I feel that the hernia was merely incarcerated and not strangulated. Furthermore, I do not believe that the man was actually obstructed.

What about the possibility of common-duct stone? Certainly the pain is atypical for biliary pain and is more suggestive of small-bowel pain. The case does not appear to be one with a simple, uncomplicated common-duct stone.

What about the possibility of perforated ulcer? He has a practically negative past history except for intolerance to fats. So far as we know he had no pain coming on after meals. Of course that does not rule out perforated ulcer, because a great many ulcers without symptoms first make themselves known by acute perforation.

The next possibility is some sort of vascular accident. In favor of that is the age. He is seventy-one. I do not know how to interpret the loose bowel movement, but I might temporarily include it among the things that make me think of vascular accident, such as mesenteric thrombosis. The low blood pressure is possibly normal, but in a man of seventy-one makes me suspicious.

The next possibility is that of acute pyogenic infection, and this is what one would consider most probable with fever, temperature and chill. In addition, we have the very prompt leukocytosis, and the tenderness in the abdomen. Against infection, we have the fact that the tenderness in the abdomen is rather indefinite; what there is, is acute around the umbilicus and indefinite in the right lower quadrant. Furthermore, we have rather complete absence of the spasm which usually accompanies an acute inflammatory process. I think appendicitis is a real possibility. One cannot afford to overlook even the slightest amount of tenderness in the right lower quadrant.

What about regional ileitis? We have indications of infection and of some degree of small-bowel intestinal obstruction, but I doubt this possibility. What about acute pancreatitis? Any rather weird sort of story, particularly one associated with more vomiting than this man had, that simulates intestinal obstruction but is not intestinal obstruction makes one think of acute pancreatitis. I shall speak of that later. We might even have a combination of an infectious with a mechanical process, such as common duct stone and cholecystitis. Here, again, the pain is rather

atypical, and I have other reasons why I believe that such is not the case. In line with this, however, I should like to mention gallstone ileus — a diagnosis which I some day hope to make. The picture is that of an acute or subacute infection starting in the biliary tract and complicated or followed by symptoms consistent with small-bowel intestinal obstruction. It is a scant possibility.

Why did he have *very* tender hemorrhoids? I see a great many hemorrhoids in the Rectal Clinic, and they are never very tender. These patients are uncomfortable and do not like a rectal examination, but if you are gentle, you can carry it out and obtain the information you are looking for. Possibly he had a fissure in addition to hemorrhoids, or a thrombosis. This tenderness may be of some significance, but I doubt it.

He was observed for a period of twenty-two hours and the following changes were noted. His pain disappeared, and peristalsis became normal, a stomach tube was passed and the stomach was found to be empty. Certainly these findings are all strongly against intestinal obstruction. Furthermore, the blood chlorides were normal, his temperature came down and he seemed improved in some ways; yet the white count went up. This is strong evidence in favor of an acute infectious process, and even before operation we learn that he had a slight degree of jaundice with a van den Bergh of 1.5 indirect. As I understand this test, the indirect reaction usually makes us think more particularly of some hemolytic type of jaundice This reading was so low that I do not believe it is to be depended on, and I shall pass it over with just that mention. The evidence prior to operation might almost be made to point to pancreatitis and some disturbance in the biliary tract.

Appendectomy and repair of the hernia were done. There are only two reasons for removing the appendix. One is that it is diseased and the second that the general condition of the patient is good enough so that it can be taken out incidentally following some other operation.

In reconstructing this case, it would seem to me that the operator suspected that trouble had started in the upper abdomen and that an upper abdominal incision was made without finding any definite lesion there. Either fluid or pus must have been found in the abdomen because colon bacilli were reported in the culture. Only one of these operations was an elective procedure, for surely two elective procedures were not carried out on a man as sick as this. The facts would indicate to me that he must have had acute appendicitis. Whatever was done, failed to check some of the pre-existing symptoms; and the jaundice and distention persisted and the fever remained. On the first postoperative day he seemed better — his abdomen was soft and he had audible peristalsis, which is against peritonitis. On the fifth day he developed hiccoughs, which is indicative of diaphragmatic irritation; he became more distended and yet had no pain. The distention, the absence of pain and the presence of peristalsis, all point far more strongly to sepsis than to obstruction. They found 1800 cc. of fluid in the stomach. We read that the white count had dropped to 12,000. That is a good or bad sign, and certainly appears to be bad in view of the outcome five or six days later. On the ninth day we find that his icterus had increased and that his van den Bergh was 3.75. The fact that it was biphasic means nothing to me; I should be much more interested to know what the stools or urine showed. It seems to me too low after that length of time for complete obstructive jaundice. The tenth day his temperature was 103°F., and his pulse 130. He was obviously toxic and dying of sepsis, but it seems too late for a general peritonitis. He probably had a terminal pneumonia complicating an acute pyogenic infection. Where else could it originate except from the appendix? I believe this man must have had an appendicitis, starting with a chill, which is usually a bad omen. Such cases are frequently complicated by pylephlebitis; and acute appendicitis accounts for about 50 per cent of these rather rare complications. I do not believe he died from peritonitis, although he unquestionably had some degree of peritoneal involvement. My diagnoses are acute appendicitis, pylephlebitis, localized peritonitis, terminal pneumonia and incarcerated hernia.

Dr. Horace K. Sowles: I should expect by the history that there must have been subacute perforation in the intestinal tract or the gall bladder. No idiopathic peritonitis has ever been reported in a person of that age.

Dr. Marshall K. Bartlett: This was a very interesting case, and as you might imagine we were quite puzzled. When this patient first came in Dr. Cantlon felt that he had appendicitis and should be operated on. I agreed with this and told him to go ahead, but the patient declined; so the next morning we showed him at surgical "grand rounds," and the consensus was that his symptoms were probably due to his umbilical hernia. He still refused to be operated on until late that afternoon, when he finally consented. I operated with a diagnosis of strangulated umbilical hernia and made the usual incision for repair of such a hernia. When we opened the peritoneum there was nothing in the sac, but there was a little properitoneal fat around it. No omentum was felt in the sac. A little free fluid was encountered; this was cul-

tured, as you have heard. There were some small yellow areas on the small bowel under the serosa, the like of which I have never seen, and I did not know whether they represented fat necrosis. At that point we looked at the appendix. He had an acutely inflamed gangrenous appendix with no gross perforation. It was removed without difficulty, and we were forced to repair the umbilical hernia because of the type of incision we had made.

Clinical Diagnoses

Acute appendicitis.
Peritonitis.
Bronchopneumonia.

Dr. Fish's Diagnoses

Acute gangrenous appendicitis.
Pylephlebitis.
Localized peritonitis.
Incarcerated hernia, umbilical.
Terminal pneumonia.

Anatomic Diagnoses

(Acute appendicitis.)
(Umbilical hernia.)
Cholelithiasis.
Choledocholithiasis.
Coronary thrombosis, old and fresh.
Cardiac hypertrophy.
Cardiac infarction.
Pulmonary embolism.
Pulmonary infarction.
Chronic cystic pancreatitis.

Pathological Discussion

Dr. Tracy B. Mallory: The autopsy left us with two possible explanations for the jaundice. I do not feel perfectly sure which it was. The appendectomy had been successfully carried out, and there was no peritonitis. The small bowel was dilated as far down as the midportion of the ileum, then tapered gradually to moderate constriction at the lower end, but there was no obstruction anywhere. The gall bladder contained a tremendous number of small stones, and about a dozen of these stones were in the common duct at the papilla of Vater. Nothing in the past history suggested this finding. It is by no means certain that this was the cause of the jaundice, because there were two other factors that might easily have played a role. Dr. Fish commented that the blood pressure was suspiciously low for his age. I think that was a cogent observation because he had a considerably hypertrophied heart (470 gm.), showing an old infarct at the apex with a great deal of bulging which could almost be called a cardiac aneurysm. The coronaries were all markedly narrowed, and there was a fresh thrombus in the left descending branch. So it is fair to assume that he had a feeble heart. The one other very outstanding finding at autopsy was the presence of multiple emboli throughout the pulmonary arteries. The pulmonary arteries of both lower lobes were completely filled with them, and the right lower lobe was massively infarcted and the left lower lobe partially infarcted. A major pulmonary infarct, particularly in a person with some degree of circulatory failure, is a perfectly good cause of jaundice, and it is not at all impossible that this was the source and not his gallstones. We did find a pancreatitis, but it was a chronic one with cyst formation and I am sure played no role in his symptomatology.

Dr. Bartlett: I neglected to say that the small bowel at operation showed exactly the same distention that Dr. Mallory has described. This brought up the question at that time as to whether he had obstruction. Further exploration showed that it gradually tapered off to normal diameter and no point of obstruction was found.

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SYPHILIS LOOKS AT THE DOCTOR

SYPHILIS — an ominous name and a dreaded infection shrouded in mystery through the centuries, potent wrecker not only of individuals but of whole families, the very word shunned by tongue and type — is not unconquerable. The cause has been discovered, the treatment proved effective if the diagnosis is made early. In the last ten years the Scandinavian countries have contributed one of the most startling public-health events of recent times. They have demonstrated to the world a control of syphilis in those nations almost as convincing as the miracles of the eradication of yellow fever in the Canal Zone or of malaria in the Pontine marshes. It may not be possible to duplicate elsewhere the remarkable results obtained in these compact homogeneous countries, but they have indicated conclusively that it is possible to check syphilis. The development of facilities for the diagnosis and adequate treatment of all classes, the education of the public, and the enlistment of physicians in early diagnosis, in reporting and in adequate treatment have been the essential links in their chain of control.

As Nelson points out in this issue of the *Journal*, case finding — the detection of the individual case and the reporting to a central authority — is the spearhead of the attack. Then follow case control, by isolation, if necessary, and by treatment, and subsequently the discovery of related infections and their control. Responsibility for the control of syphilis as in tuberculosis is placed squarely on the shoulders of the average practicing physician, first in making the diagnosis, secondly in controlling known infections, and thirdly in discovering related infections. Education, detection, treatment, follow-up — a chain no stronger than its weakest link.

Every physician sees syphilis — or rather examines patients who have syphilis. One has only to read the recent article of Cannon* concerning the manifestations under which *Treponema pallidum* can masquerade. Similar evidence can be contributed by any syphilis clinic. Almost every person sooner or later presents himself to a physician either in private practice or in the clinic. The physician is the outpost, the sentry on watch, and his level of suspicion for any contagious disease should be high. In this age of modern preventive medicine the practicing physician needs to take his responsibility as a health officer for the individual case as seriously as if duly appointed to such a position. With such alert outposts and proper organization, syphilis as a dreaded disease can be recognized and conquered as it has been in the land of the Vikings.

One might dream of syphilis as a preventable disease. Syphilis a preventable disease! Perhaps not in the sense that one can control all human nature, but with the point of view that fifty per cent of syphilis infections are classed as innocent

*Cannon, A. B.: The tracing of syphilis through common ailments. J. A. M. A. 109:348, 1937.

infections and not due to illicit relations. Even today, syphilis is preventable if known principles are applied. Congenital syphilis, for example, should not occur. If every pregnant woman seen in private practice had a serologic examination of her blood, as it is now done in every established prenatal clinic in Massachusetts, and received adequate treatment during pregnancy if evidence of syphilis were found, congenital syphilis would be eradicated within a very short time. Certainly a worth-while achievement for the medical profession!

Four centuries have elapsed since Fracastori contributed to this disease its name, and almost a third of a century since the cause was discovered, but the infection still pursues its course. A way has been pointed out: the individual practicing physician should contribute his share.

FEDERAL GRANTS FOR PUBLIC HEALTH ACTIVITIES

Among the provisions of the Social Security Act passed by Congress in 1935, certain sections stipulate conditions covering grants in aid to state departments for the purpose of augmenting public health activities. These contributions made under the direction of the United States Public Health Service of the Treasury Department and the Children's Bureau of the Department of Labor are conditioned by the Surgeon General and by the Secretary of Labor, respectively.

As early as 1893 the Surgeon General was directed by law to co-operate with and aid state and municipal health authorities in the enforcement of the health regulations of such authorities, and in 1917 Congress appropriated $25,000 for this purpose.

Public health plans now in operation under the Social Security Act are amplifications of the policies previously adopted, and demonstrate a growing recognition of governmental responsibilities in advancing efficient public health administration by the states.

We are indebted to Dr. Chadwick, Massachusetts Commissioner of Public Health, for statements showing the allotments to Massachusetts for the federal fiscal year beginning July 1, 1937; $236,471 comes through the United States Public Health Service and $175,756 from the Children's Bureau. The total amount made available to Massachusetts, including a balance carried over from the previous year, is $428,542. This is approximately one half of the State appropriation ($808,000) to this department for public health service, exclusive of the amounts appropriated for the maintenance of tuberculosis sanatoriums, cancer hospitals and subsidies for the tuberculosis patients. To Dr. Chadwick's letter, published in this issue of the *Journal,* is appended a statement showing the allocation of this federal money to the different divisions of the department.

Certain amounts are appropriated for training personnel. These are used to pay the tuition and a stipend for certain students at the Harvard School of Public Health, for others taking the courses in sanitation at the Massachusetts Institute of Technology and for nurses taking postgraduate work at Simmons College and Columbia University. Some money is used to finance the postgraduate lectures to physicians that are planned jointly by the Massachusetts Medical Society and the Department of Public Health. A little more than ten per cent of the total amount of federal funds allotted to Massachusetts is used for training personnel and postgraduate instruction to physicians, nurses and sanitarians. Other amounts are allotted to the health districts of Barnstable, Berkshire and Franklin counties and the Nashoba district.

Pamphlets published by the United States Public Health Service and the Children's Bureau give detailed information in regard to the expenditure of the Social Security Fund. These pamphlets show that the United States Public Health Service receives an appropriation of $8,000,000 and the Children's Bureau for maternal and child health $3,800,000 and for service to crippled children $2,850,000, all for distribution to states.

In making these allotments the Surgeon General must take into account certain major factors, namely the relation of the population of each state

to the total population and the financial needs and special health problems of each state. The greater part of these funds must be matched by state appropriations. In Massachusetts, fortunately, there were sufficient appropriations in the annual budget so that no additional appropriations were needed. This applies both to the funds allotted from the United States Public Health Service and from the Children's Bureau.

All the facts pertaining to federal grants in aid to public health and child welfare can be found in *Supplementary Publication No. 126* of the United States Public Health Service and *Bulletin No. 1* of the Children's Bureau of the Department of Labor, which may be obtained on application to the Superintendent of Documents at Washington. The letter from the Commissioner of Public Health of Massachusetts, giving certain facts in answer to requests for information will, we are confident, interest the readers of the *Journal*.

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY

M. Fletcher Eades, M.D., *Secretary*
19 Bay State Road
Boston

Case History No. 50. Bleeding from Hydatid Mole

A twenty-five-year-old married woman was admitted to the hospital on December 11, 1936, with the following history. Eighteen weeks before entry she had had her last normal menstrual period. Since that time her abdomen had swollen progressively in size so that at the time of entry, her abdominal tumor was the size of a seven or eight months' pregnancy. Intermittently during this eighteen-week period the patient noticed a bloody vaginal discharge. The discharge consisted at first of a small amount of bright-red blood sufficient to stain a vaginal pad slightly and occurring about two or three times a week; there were never any clots. In the last month the discharge had changed to a brownish-staining material. The discharge was unaccompanied by any pain in the abdomen or by any urinary or bowel symptoms. An Aschheim-Zondek test done about two weeks before entry was strongly positive, but an x-ray was negative for pregnancy.

For the past month the patient had vomited nearly every night. For the four days prior to entry she received 3 gr. adrenal cortex extract twice a day with some diminution of her anorexia. During the week previous to entry her abdomen had become very tense and somewhat tender. The patient felt that she had lost some weight, but how much she did not know, and her friends had noticed a distinct facial pallor. Shortly before admission her left ankle became swollen; this had persisted without change until the time of entry.

Except for the usual childhood contagious diseases her past history was negative. There was no family history of cancer, diabetes or tuberculosis. There was no history of previous pregnancies.

The patient was a well-developed and nourished woman. Her temperature was 98.7°F., her pulse was 78, and her respiratory rate was 20 per minute. Her pupils reacted to light and distance. Her mucous membranes were pale. The thyroid was not palpable, and there were no palpable cervical lymph nodes. The lungs showed no rales or dulness. Her heart was not enlarged; there were no murmurs. The blood pressure was 182 systolic, 108 diastolic. The abdomen was somewhat tender; the upper pole of the abdominal tumor was two fingers below the xiphoid process. No fetal heart sounds were heard.

On vaginal examination the cervix was found to be firm and non-patent. The tumor above described seemed definitely to be the uterus. There was a fullness in the posterior cul-de-sac. Examination of her extremities revealed a distinct pallor of the nail beds with slight pitting edema of the left ankle. Reflexes were normal.

Examination of the urine revealed a trace of albumin, six or eight white blood cells and three or four red blood cells per high-power field, and a few coarsely granular casts. The white blood-cell count was 9000, red count 3,750,000, and hemoglobin 70 per cent. The differential count was normal.

Presumptive diagnoses of hydatid mole and right ovarian cyst were made, and a laparotomy was performed twenty-four hours after entry. Both ovaries were found to be cystic, with a cyst the size of an orange on the right and one the size of an egg on the left. The right ovary was removed, but the left was unmolested. The uterus was the size of a seven months' pregnancy, and upon incision many grape-like cysts were evacuated. Pathological examination revealed the uterine contents to be a hydatid mole, and the ovarian cyst benign in character.

A series of selected case histories by members of the section will be published weekly.

Comments and questions by subscribers are solicited and will be discussed by members of the section.

Except for slight abdominal distention, her convalescence was uneventful until the seventh postoperative day. At this time, without warning, the patient complained of not being able to see well and shortly thereafter had right-sided convulsions with cyanosis lasting for about ten minutes. Shortly after the convulsion her blood pressure was found to be 200 systolic, 100 diastolic, and her eye grounds showed very tortuous vessels but no exudate. Under treatment with sedatives and magnesium sulfate there was no recurrence of the convulsions, and her blood pressure gradually fell so that it was 128 systolic, 90 diastolic, a week after the seizure. She was discharged improved on her eighteenth postoperative day.

Three days after her discharge from the hospital the patient began to have a bloody vaginal discharge, requiring the use of one vaginal pad daily. She was readmitted to the hospital three weeks after discharge. There had never been any passage of clots or other tissue, or any abdominal cramps, nausea or vomiting. There had been no undue fatigue or loss of weight. Her blood pressure was 130 systolic, 80 diastolic, and her red blood-cell count was 4,800,000 with a hemoglobin of 75 per cent.

A curettage was performed to be sure that the bleeding did not come from a chorioepithelioma following the hydatid mole. The pathological report from the curettings was hyperplastic endometritis.

Since her final discharge from the hospital her health has been excellent. Aschheim-Zondek tests done every month for six months after discharge were always negative.

Comment. Had this case been under proper prenatal care from the beginning of her pregnancy, the diagnosis of mole would have been made while the uterus was still small enough so that it might well have been evacuated by curettage. The diagnosis of mole is made by an unusual increase in size of the uterus for the period of pregnancy and upon quantitative Aschheim-Zondek tests. A mole gives a very much more strongly positive test than does a normal pregnancy. When a case of hydatid mole has been neglected and has developed to the size of this one, abdominal hysterotomy is the operative method of choice. It is very important to follow these patients after operation to be sure that the uterus does not increase in size — an indication of malignant degeneration. As was done in this case, it is absolutely essential that repeated Aschheim-Zondek tests be made. If they become positive, hysterectomy should be performed. Cystic degeneration of the ovaries is a common accompaniment of hydatid mole. It has been said that these cysts disappear after the removal of the mole. It would have been interesting to know whether the left ovary was palpated at the time that the curettage was done three weeks after the original operation.

OBITUARIES

RESOLUTION ON THE DEATH OF JOHN MICHAEL DORAN

Whereas, John Michael Doran, for the past thirty years a member of the Chelsea Memorial Hospital staff and for the past seven years its president, has passed from this life, it is fitting that this staff take proper recognition of his contribution to this institution.

His was a buoyant spirit. He met life with a smile and never whimpered. Unselfish to the point of utter disregard of his own personal fortunes, he was loved by everybody. He worked unceasingly for the good of this hospital and accomplished much. He found medicine an honorable profession and left it so, and brought honor to everything he touched.

But words are such futile things. The people of this city on the day of his funeral said it so much better than we can hope to. That tremendous outpouring of sorrowful people of all races and creeds was no mere accident. These things are not for sale. He earned it. They knew it and they gave it to him gratefully for a lifetime of devoted and unselfish service.

This hospital will miss him, and to those of us whose privilege it was to be intimately associated with him down through the years, it is difficult to believe that he is gone. To us he seemed so permanent, so dependable, so necessary. We shall miss him sorely and remember him always as that fine and, sometimes it seems, passing type of gentleman who kept the profession above the standards and the aspirations of a mere trade; who, in passing through life, added appreciably to the sum total of human happiness and in passing out of it inspired everyone who ever knew him to say, "God bless and keep your gallant spirit."

Therefore: Be it resolved that a copy of these thoughts be spread upon the records of the hospital staff, that a copy be given to the press and that a suitably engrossed copy be presented to his family.

Resolutions Committee
WILLIAM F. REGAN,
EDISON W. BROWN,
LAWRENCE J. MCCARTHY.

RESOLUTION ON THE DEATH OF GEORGE FRANCIS KEENAN

Whereas, in the death of George Francis Keenan the staff of St. Elizabeth's Hospital has suffered the loss of a colleague whose devotion to our hospital and to the care of the ill was a major concern of his life;

We, the members of the staff, desire to join in an expression of appreciation of his personality and in homage to his memory.

By his genial and forceful nature, his loyalty to his friends and his inspiration to the young men in medicine, he endeared himself to us all.

By his devotion to his state and to his nation in military affairs, to which he gave unstintingly of his time, he won the esteem of his comrades in the service.

Therefore: Be it resolved that the staff of St. Elizabeth's Hospital hereby expresses its sense of loss and extends this expression of sorrow and sympathy to his family.

E. J. Cronin, *Staff Secretary,*
St. Elizabeth's Hospital.

RESOLUTION ON THE DEATH OF NATHANIEL STEVENS HUNTING

Nathaniel Stevens Hunting, born in Detroit, Michigan, on February 18, 1863, son of Rev. Sylvan Stanley Hunting and Julia Maria Stevens, died in Quincy, Massachusetts, on November 21, 1937.

A graduate of Harvard College in 1884 and the Harvard Medical School in 1889 and a house officer at the Boston City Hospital and the Children's Hospital, he began his medical and surgical career as assistant to Dr. John A. Gordon in 1889. It was during this association and largely due to their combined efforts that the Quincy City Hospital was founded. In 1891, he married Clara Ware Carter, of Denver, Colorado, who survives him.

During his whole life, he showed the keenest interest in his fellow man, far above and beyond what his profession required. He served in the World War in the First Harvard Medical Overseas Unit in 1915; he was chairman of Medical Advisory Board No. 43 of Massachusetts throughout the War and a major in the Fourteenth Regiment, Massachusetts National Guard. He was chairman of the Quincy Chapter of the American Red Cross and a member of the School Committee of his adopted city for thirty-four years, during which period the public educational system was brought to the highest state of efficiency; he served in many other lines to the benefit of the community.

He showed unusual activity as a member of the staff of the Quincy City Hospital from its inception and for the last few years was consulting surgeon. He was a member of the Massachusetts Medical Society, at one time president of the Norfolk South District Medical Society, a fellow of the American Medical Association and the American College of Surgeons, and a member of the Boston City Hospital and Children's Hospital alumni associations, the Sons of the American Revolution, the University Club of Boston and the Harvard Club of Quincy.

Therefore: Be it resolved that we the members of the Norfolk South District Medical Society, in regular meeting assembled, are deeply conscious of our irreparable loss in the passing of Nathaniel Stevens Hunting — a man simple and true, great, loyal and charitable, friendly and self-effacing, strong in manhood, wise in counsel, inspiring in leadership, sympathetic in his understanding, self-sacrificing in his service,

And that this resolution be spread upon the records of the Society and that copies thereof be sent to the *New England Journal of Medicine* and to the family of our late member as an earnest and genuine expression of our sympathy.

Francis R. Burke,
George H. Ryder,
William J. McCausland.

MISCELLANY

CONFERENCE ON BETTER CARE FOR MOTHERS AND BABIES

Katharine F. Lenroot, chief of the Children's Bureau, U. S. Department of Labor, recently announced that at the request of various professional groups and national organizations interested in maternal and infant health and welfare, the Children's Bureau is calling a Conference on Better Care for Mothers and Babies to be held in Washington, January 17 and 18, 1938.

The problem of maternal care and care of the newborn continues to be a matter of grave concern to the people of this country. No matter what method of statistical procedure is used to assign cause to maternal deaths, the United States retains an exceedingly high maternal mortality rate as compared with other countries. In 1935 the number of maternal deaths due directly to pregnancy and childbirth was 12,544. Additional deaths of pregnant women due to other primary causes raised the total number to 14,296. The number of stillbirths in 1935 was 77,119, and the number of babies dying in the first month of life as the result of causes arising during pregnancy or at time of delivery was 56,262. This means that the total loss of life from maternal deaths, stillbirths and deaths of babies in the first month of life from causes associated with maternal conditions was 147,677 for the single year of 1935. The steadily declining birth rate makes this loss of life of even greater significance and gives further emphasis to efforts toward prevention.

The call for the Conference on Better Care for Mothers and Babies grew out of findings with reference to the need for an expanded program of maternal care presented

to the chief of the Children's Bureau by its Advisory Committee on Maternal Welfare of which Dr. Fred L. Adair is chairman. Those associated with him in drafting these findings were:

Hazel Corbin, R.N., Maternity Center Association, New York City.
Robert L. DeNormandie, M.D., Boston, Mass.
George W. Kosmak, M.D., New York City.
James R. McCord, M.D., Emory University School of Medicine, Atlanta, Ga.
Lyle G. McNeile, M.D., Los Angeles, Calif.
Alice Pickett, M.D., University of Louisville, Louisville, Ky.
E. D. Plass, M.D., State University of Iowa, Iowa City, Iowa.
Philip Williams, M.D., University of Pennsylvania School of Medicine, Philadelphia, Pa.

The Bureau's General Advisory Committee on Maternal and Child-Welfare Services at its meeting in April requested the chief of the Children's Bureau to consider the steps necessary for the accomplishment of these purposes. Many organizations have expressed interest in the program, and a recent newspaper poll indicated that 81 per cent of the public was in favor of making public funds available to provide needed care for mothers and babies.

Since the Social Security Act was passed a division of maternal and child health has been organized in every state, Alaska, Hawaii, and the District of Columbia with a medical director in charge of the program, which is under the administration of the Children's Bureau. Prenatal and child-health conferences are being organized, but the great need outstanding is that of medical care of mothers at the time of confinement. Only by competent care at delivery can lives of many mothers be saved.

GROUP HOSPITALIZATION

It has been said often that the rich and the poor have adequate hospital care. The rich because they have money; the poor because they have charity. But what about that great middle group — those persons of moderate income? Meeting hospital emergencies has always been a financial hardship for them, and until a few years ago no solution whatever to their problem had been found.

Then, in 1929, a movement was born in this country which offered at least a partial solution. This movement is called "group hospitalization." In words of fewer syllables, it is a method of group budgeting for hospital care. Individual budgeting is hardly possible for several reasons. No one can foretell when he will be sick or what his sickness will cost. Therefore, it is impossible for the individual — or the family — to budget for hospital bills as he can plan for food, shelter, clothing, furniture, entertainment, or even an automobile license. He *does know* approximately what each of these standard items will cost and *when* he will purchase them.

This inability to plan for sickness with any degree of accuracy underlies the economic difficulties faced by the average individual at a time of sudden and severe illness. The hospital service required by one individual cannot be predicted. But the amount of such service necessary for a *group* of persons can be estimated with reasonable accuracy. In other words, a number of persons can do what one cannot accomplish alone. The group can budget the total amount of hospital care required by the entire number during a given period of time. Group budgeting for hospital care is a way of removing the economic hazard of illness.

I think we may safely say that this group budgeting is not merely a theory. It is an accomplished fact, since almost 1,500,000 people in the United States are now actually placing hospital care in the family budget through the payment of small fixed, periodic sums into a common fund which is used to purchase hospital care for those members who require it.

This procedure is a form of nonprofit insurance and is called group hospitalization, or group hospital service. It is in operation in more than 60 American communities. About 700 hospitals actively participate in the sponsorship of group budgeting for hospital care.

The movement had its beginning in this country in 1929 at Dallas, Texas. A group of 1500 teachers contracted to pay to Baylor University Hospital the sum of three dollars each, per semester. The hospital agreed to provide, when necessary, three weeks' care in semiprivate accommodations to any member of the group who became ill. By the end of 1930, the advantages of this arrangement were obvious and other employed groups asked the hospital for permission to participate on a similar basis. The service is still in operation, with about 20,000 persons now enrolled for benefits.

By 1931 the Baylor project had been adopted by several other hospitals. Most of these early plans arranged for enrollment of subscribers through a sales agency, on a commission basis, and the results were not entirely satisfactory. In 1932, at Newark, New Jersey, was organized the first group hospital service offering free choice to subscribers among a number of member hospitals. Thirteen hospitals contracted to serve subscribers, and continued as the only member hospitals until 1935 when the service was extended to include the whole state of New Jersey, with 46 affiliated hospitals. Perhaps the most successful group hospital service unit in the United States is the one in New York City. After two and a half years of operation it has almost 750,000 subscribers and 300 member hospitals. During the calendar year 1937, it will pay to member hospitals three million dollars for service to 50,000 of its subscribers. Dr. C. Rufus Rorem, director of the Committee on Hospital Service for the American Hospital Association, now predicts that 10,000,000 United States citizens will be enrolled for group hospital benefits by 1942.

On September 10, this year, Associated Hospital Service Corporation of Massachusetts opened offices at 21 Milk Street, Boston. It is a nonprofit corporation set up to make group hospital service available to all residents of Massachusetts. Incidentally, it is the fourth organization of its kind as to scope. New Jersey, North Carolina and Alabama have the three other state-wide hospital service associations.

I might mention here that no two of these sixty or more hospital service plans are alike, except in principle. Each serves a particular community and is organized to meet the peculiar local needs of the community. However, they are operated in much the same manner. That is, groups of individuals make small, regular and equal subscriptions to a common fund which is used to purchase hospital care for the members.

The American Hospital Association has endorsed as the most satisfactory type of service organization that which gives the subscriber free choice among a number of member or affiliated hospitals. The Massachusetts service is of this type; it now has more than 80 member hospitals, and according to its executive director, Mr. R. F. Cahalane,

A "Green Lights to Health" broadcast given by Dr. Joseph B. Howland on Wednesday, December 8, and sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

all approved general hospitals in the State will probably be affiliated during the next year or two.

To date more than 7000 citizens of the State have been enrolled as subscribers. And already 25 of these members have received hospital benefits. The cases include acute appendicitis and fractures sustained in sports, in automobile accidents and otherwise. Two cases of pneumonia have been treated, and there have been various small repair jobs and minor operations, the latter requiring only a short period of hospitalization.

In Massachusetts, as in most other communities, the basic rate for individual membership is ten dollars yearly. Joint membership for husband and wife and family memberships are available. Hospital benefits include room and board in semiprivate accommodations for twenty-one days out of each subscription year. The twenty-one days can be used in one, two or more admissions. The operating room is free with each admission if necessary. Anesthesia to a maximum of ten dollars is included with each admission if necessary. Routine nursing, medications and dressings are provided. Routine laboratory and pathological service, electrocardiograms, basal metabolism tests and blood chemistry are a part of the service for hospitalized patients when ordered by the attending physician. No ambulatory or outpatient service is included. Care in obstetric cases is included after eleven months of continuous membership. Obstetric care includes any condition resulting from pregnancy, hospital care of the mother and nursery care of the infant during hospitalization of the mother.

The subscriber selects his own physician and makes payment for medical service direct to the physician. The hospital service does not alter or interfere in the relation between doctor and patient. Hospital admission is arranged in the usual way by the attending physician. The subscriber patient is hospitalized without question upon the recommendation of his physician. In selecting a member hospital in which to receive treatment, the subscriber must go to one where the attending physician has staff or courtesy privileges. The benefits included cover the treatment and care of all illnesses and injuries regularly accepted for treatment by the member hospital selected, but do not, in any event, cover pulmonary tuberculosis after diagnosis as such, venereal diseases, quarantinable cases or mental disorders.

Subscribers are entitled to semiprivate accommodations in rooms not exceeding four beds, and in rooms designed for semiprivate service. However, the patient may occupy a private room upon payment to the hospital of the difference between five dollars per diem and the regular daily rate charged for the room he selects. All costs of x-ray diagnosis and treatment must be paid by the subscriber patient.

The primary purpose of group hospital service is to aid the individual in financing hospital emergencies. Its secondary aim is to provide member hospitals with larger numbers of full-paying patients in first-class accommodations. It does not claim to be a *panacea* for hospital financial difficulties, but I believe that all agree that it is at least a partial solution for the person of moderate means.

An editorial which appeared in the *New England Journal of Medicine* for October 7, 1937, sums up my own personal opinions and ideas on the subject of group hospitalization. In closing, I will quote a part of that editorial.

"The evidence already at hand indicates that the reduction of hospital costs under the service permits many patients, who otherwise would demand free care, to pay reasonable fees to physicians during hospitalization. Finally, a service that provides the much needed extension of hospital facilities to a larger portion of the public, and at the same time brings financial support to our hospitals from the public they serve, should command the support of the medical profession.

"Problems will doubtless arise. But in the first flush of enthusiasm we foresee more of the public receiving the benefits of hospital care, ward patients becoming semiprivate patients, and semiprivate patients turning to private patients, while doctors, nurses and hospitals derive an income from the patients who heretofore constituted a public charge.

"And all this will be accomplished at the expense of the individuals who can rejoice in the economy of good health and look forward with a minimum of anxiety to their day of serious illness."

SAN FRANCISCO AMERICAN MEDICAL ASSOCIATION MEETING

Members should write today if they contemplate attending the American Medical Association meeting in San Francisco this June and obtain their hotel reservations. See recent issues of the *Journal of the American Medical Association* giving list of San Francisco hotels and rates. Send in your requests to Dr. Frederick C. Warnshuis, 450 Sutter Street, San Francisco, California, giving names of members of your party, type of accommodations desired, rates, date of arrival and departure.

The San Francisco session promises to be an outstanding one by reason of the scientific program, scientific and technical exhibits and the social functions. In addition, there is the lure of California with its scenic beauty, majestic mountains, fertile valleys and historic background. An opportunity presents to combine profit of the program with the pleasures of visiting San Francisco, the Golden Gate City.

Come by train, boat, auto or plane,— no matter how,— but come. Your visit will ever be one of pleasant memory. San Francisco and its medical profession anticipate the pleasure of being your hosts and cordially invite you to come to the San Francisco meeting. Watch the *Journal of the American Medical Association* for program features and events.

FREE PUBLIC LECTURES

Harvard University has recently announced the subjects and speakers of its course of free public lectures on medical topics that are given each year at the Harvard Medical School. As usual these will be given in the amphitheater of Building D at 4:00 p. m. on Sundays. The schedule is as follows:

January 9. Men, Motor Cars and Alcohol. Dr. Harry R. DeSilva.
January 16. Cancer. Dr. Shields Warren.
January 23. Teeth: Deciduous, Permanent and Artificial. Dr. Paul E. Boyle.
January 30. Progress in Preventive Medicine. Dr. Frederick F. Russell.
February 6. Colds, Influenza, and Pneumonia. Dr. Maxwell Finland.
February 13. Menstrual Disorders and the Menopause. (For women only.) Dr. John Rock.
February 20. Overweight and Underweight. Dr. F. Dennette Adams.
February 27. Pain in the Abdomen. Dr. Channing Frothingham and Dr. Richard H. Miller.

March 6. Heart Disease. Dr. Herrman Blumgart.
March 13. Nervous Fatigue. Dr. Merrill Moore.
March 20. The Family Medicine Cabinet. Home Remedies and When to Use Them. Dr. Reginald Fitz.
March 27. Arthritis. Dr. Walter Bauer.

SECOND NATIONAL SOCIAL HYGIENE DAY

"Stamp Out Syphilis — Foe of Youth" will be the theme of the Second National Social Hygiene Day to be observed on February 2, 1938.

Of the half million known new cases of syphilis each year, one in five is found among young men and women under twenty years of age. More startling perhaps is the fact that half of all syphilis infections are contracted by individuals in the age group of twenty to thirty years, a group which represents only one fourth of the nation's population.

In line with the youth theme the American Social Hygiene Association is enlisting the interest of those national organizations whose primary concern is with the problems of young people. The American Youth Congress, the General Federation of Women's Clubs, parent-teacher organizations, church and "Y" groups, service clubs and many others will be asked to join in special observance of the proposed program.

Many were active during the period of the First National Social Hygiene Day early this year. New co-operating organizations, impressed by the success of that pioneer venture, have come forward voluntarily to share in the task of making the Second Social Hygiene Day an even greater success.

Last February's event resulted in more than five hundred conferences and meetings, one hundred and thirty-five radio periods and a sweeping flood of newspaper and magazine comment.

Indications point to an even greater national response to the 1938 Social Hygiene Day, and all agencies and persons who have at heart the success of the campaign to stamp out syphilis are urged to join in this national endeavor to tell all the people the facts about this enemy of youth and public health, and how it may be conquered.

In addition to preliminary activity for the Second National Social Hygiene Day, the American Social Hygiene Association, through its National Anti-Syphilis Committee, is organizing state and local committees to assist in the appeal for $500,000 which will enter its general solicitation phase immediately after February 2, 1938.

General John J. Pershing heads the committee, Dr. Ray Lyman Wilbur is vice-chairman, and Charles H. Babcock is chairman of the executive committee. Over two hundred leaders in the professions and business have endorsed this national appeal and have pledged themselves to aid in the fight to "stamp out syphilis."

NOTES

Dr. John B. Hawes, 2d, president of the Boston Tuberculosis Association, was one of the out-of-town speakers at a tuberculosis institute for physicians of New Orleans, Louisiana, on November 22 and 23. This two-day institute consisted of an intensive series of demonstrations and talks and was financed by part of the proceeds of last year's Christmas Seal Sale. He also took part in a series of lectures in Detroit, Michigan, on December 1. These lectures were sponsored by the Health Department of the City of Detroit under the leadership of Dr. Henry F. Vaughan, commissioner of health, and Dr. Bruce H. Douglas, tuberculosis controller. The City of Detroit has appropriated the sum of one million dollars to be spent during the next four or five years on educating and training the general practitioner in the diagnosis, treatment and prevention of tuberculosis and other communicable diseases. The local authorities believe very strongly that the ultimate control of such diseases, particularly tuberculosis which is still a most serious menace, depends upon the combined efforts of the medical profession and especially the general practitioner who first sees the patient and knows the family and home conditions.

The Harvard Chapter of Alpha Omega Alpha on December 1 elected the following student members from the fourth-year class: H. Bengloff, R. A. Bloomfield, E. Day, R. S. Evans, W. P. Giddings, B. C. Glueck, D. A. Green, A. P. Heusner, B. V. Jager, C. T. Klopp, W. R. Schumann, M. C. Twitchell and A. Yankauer.

An allocation of $27,121 from the Works Progress Administration has been received for the continuance of the study of alcoholism at the Boston City Hospital, under the direction of Dr. Merrill Moore.

Property to the value of $100,000 has recently been given to the Boston University School of Medicine by Dr. and Mrs. J. Emmons Briggs, of Boston.

CORRESPONDENCE

FEDERAL FUNDS FOR PUBLIC HEALTH WORK IN MASSACHUSETTS

To the Editor: I am glad to give further information in regard to federal funds allotted to Massachusetts for public health work. A detailed statement is attached.

These funds, both from the United States Public Health Service, which is under the Treasury Department, and the Children's Bureau, which is under the Department of Labor, are handled in the same way — only through the Massachusetts Department of Public Health. We submit a budget to the Public Health Service and to the Children's Bureau, and when this is approved by the respective bureau, the money is paid to the State Treasurer in quarterly amounts and disbursed under the same regulations as are State funds appropriated to this department. For example, purchases out of these funds are made through the State Purchasing Agent, and persons employed are requisitioned through the Department of Administration and Finance. If the position is under Civil Service, selection is made from the list supplied by that commission.

There is no interference by federal authorities over the details of administration. The federal grants are outright gifts to the states, and the Government does not expect to be reimbursed in any way for the funds allotted for public health work under the Social Security Act.

From my experience with the administration of the federal funds allotted to this department, I am of the opinion that the medical profession has nothing to fear from interference or the setting up of standards for medical practice that are in any way detrimental to the medical profession. It is no more "state medicine" than the members of the medical profession have been participating in for many years. Ever since the Antitoxin and Vaccine Laboratory was established at Forest Hills in 1895, physicians have been receiving State aid in their practice through the use of the serums, vaccines and arsphenamines that are supplied to them by the State for the treatment of their patients. Some of the medical schools in the country, as

you know, are financed by state and municipal taxes. Under the Social Security Act money is available to supplement state and municipal appropriations to carry on the same type of medical service through physicians that they have been accustomed to in the past.

The same physicians who now loudly protest the principles and proposals signed by a volunteer committee have looked with favor upon the plan inaugurated in Detroit by Dr. Vaughan, whereby he obtained large sums of money from the City Council to pay physicians for tuberculosis case finding and immunization of children against diphtheria.

The physicians who have been so willing to accept State aid in their practice are not consistent when they protest against further help for similar purposes when offered by the Government.

HENRY D. CHADWICK, M.D.,
Commissioner of Public Health.

State House,
Boston, Massachusetts.

FEDERAL ALLOTMENTS TO MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH
July 1, 1937 - June 30, 1938

TREASURY DEPARTMENT, UNITED STATES PUBLIC HEALTH SERVICE	
Division of Administration	$32,969.00
Division of Adult Hygiene	9,330.00
Antitoxin and Vaccine Laboratory	16,560.00
Division of Communicable Diseases	11,600.00
Division of Food and Drugs	12,220.00
Division of Genitoinfectious Diseases (special project)	29,500.00
Division of Genitoinfectious Diseases (general)	4,162.16
Division of Sanitary Engineering	28,000.00
Division of Tuberculosis	6,260.00
Wassermann Laboratory	7,470.00
Training personnel	21,000.00
N. E. Training Center for Control of Syphilis and Gonorrhea	12,000.00
Harvard School of Public Health	7,500.00
Barnstable County District	2,580.00
Berkshire County District	16,733.75
Franklin County District	9,675.00
Nashoba District	8,911.09
Total	$236,471.00
DEPARTMENT OF LABOR, CHILDREN'S BUREAU	
Services for crippled children	$84,678.48
(Polio outbreak; money available, 10 mo.)	8,362.97
Maternal and child hygiene — Fund A	72,365.37
Maternal and child hygiene — Fund B	10,350.00
Total	$175,756.82
SUMMARY	
U. S. Public Health Service	$236,471.00
Children's Bureau — maternal and child hygiene	82,715.37
Children's Bureau — crippled children	84,678.48
	$403,864.85
Additional for polio outbreak; 10 mo.	8,362.97
Total (1938 allotment)	$412,227.82
1937 balance made available (Children's Bureau)	16,315.07
Grand total	$428,542.89

SOUND PUBLIC MEDICAL EDUCATION

To the Editor: Our attention has recently been called to what we believe to be one of the finest examples of co-operation between a medical society, a health department, local agencies interested in the promotion of public health, and a newspaper. We refer to a series of six articles which appeared during October in the *Berkshire Evening Eagle,* Pittsfield, Massachusetts.

These articles all discuss various aspects of syphilis control. The first was written by the health officer of Pittsfield, Dr. Willys M. Monroe; it discusses the program for the control of syphilis as a problem in public health. The next four articles were written by a Pittsfield physician as a gesture of co-operation of the Berkshire District Medical Society with the Pittsfield Council of Social Agencies. They deal with acquired syphilis in its three stages, congenital syphilis, syphilis in pregnancy and the treatment of syphilis. The final article was written by Miss Viola Vreeland, R.N., of the House of Mercy Hospital; it concerns the relation of case holding and case finding to the control of this disease.

The articles are excellently written, tell the story fully, accurately and in understandable language, and they are given prominent space in this co-operative newspaper. All the agencies which participated in this attempt at public education are to be congratulated.

The Pittsfield Health Department is naturally interested in the control of syphilis since it is a communicable disease. The Berkshire District Medical Society grasped an excellent opportunity to place itself on record before the public (without advertising any particular physician) as not only interested in the control of syphilis but as being desirous of contributing to public medical education. The House of Mercy Hospital, through its Department of Social Service, fully understands the importance of discovering sources of infection and contacts whenever communicable disease is concerned; and the Council of Social Agencies represents all the public health and welfare agencies of the community. The newspaper represents the single greatest channel of public information.

It would be impossible to think of a more potent combination for sound, public, medical education. Every one of the agencies here represented should logically work together. In this demonstration of how it can be done, we have an example which we trust will be followed in many other Massachusetts communities.

HENRY D. CHADWICK, M.D.,
Commissioner of Public Health.

State House,
Boston, Mass.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

To the Editor: In addition to the articles enumerated in our letter of October 1 the following have been accepted:

Abbott Laboratories
Ampules Procaine Hydrochloride Solution, 2 per cent, 100 cc.

Armour & Co.
Liver Extract — Armour

Ernst Bischoff & Co., Inc.
Aminophyllin — Bischoff
Tablets Aminophyllin — Bischoff, 0.1 gm. (1½ gr.)

Flint Eaton & Co.
Calcium Gluconate Effervescent — Flint

Gane & Ingram, Inc.
Sulfanilamide

Eli Lilly & Co.
Merthiolate Suppositories 1:1000

National Biological Distributors, Inc.
Bismuth Subsalicylate in Oil

Parke, Davis & Co.
Sulfanilamide
Tablets Sulfanilamide, 5 gr.
Staphylococcus Toxoid

Rare Chemicals, Inc.
Gitalin (Amorphous)

Sharp & Dohme
Ephedrine
Ephedrine Hydrochloride
Capsules Ephedrine Hydrochloride, ⅜ gr.
Solution Ephedrine Hydrochloride, 3 per cent
Ephedrine Sulfate
Ampules Ephedrine Sulfate, ¾ gr.
Capsules Ephedrine Sulfate, ⅜ gr.
Capsules Ephedrine Sulfate, ¾ gr.
Solution Ephedrine Sulfate, 3 per cent
Ampules Bismuth Subsalicylate, 2 gr. in oil, 1 cc.
Bismuth Subsalicylate in Oil, 2 oz. bottle

E. R. Squibb & Sons
Elixir Ipral Sodium
Staphylococcus Toxoid

PAUL NICHOLAS LEECH, *Secretary.*

535 North Dearborn Street,
Chicago, Illinois.

RECENT DEATH

SANBORN — JOHN WESLEY SANBORN, M.D., of Boston, died December 5 at the home of his sister, Mrs. Frederick D. Robinson, 57 Grafton Street, Newton Center. He was in his seventieth year.

A native of Lowell, he graduated from the Massachusetts College of Pharmacy and from Harvard Medical School. Dr. Sanborn was oculist for the Roxbury Home for Aged Women. In 1918 he served as captain of the medical corps at Camp McLellan, Anniston, Alabama.

Dr. Sanborn held fellowships in the Massachusetts Medical Society and the American Medical Association. He was a member of the Norfolk District Medical Society, the Roxbury Society for Medical Improvement and the Harvard Club of Boston.

His widow, a daughter, a sister and two grandsons survive him.

NOTICES

SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held at the headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, December 21, at 12 noon.

Charles E. Wilde, Esquire, assistant to the general counsel, Liberty Mutual Insurance Company, Boston, will speak on "Co-operation of Doctors with Casualty Insurance Companies." Dr. J. Harper Blaisdell, of Boston, will speak on "Associated Hospital Service."

All physicians are cordially invited to attend.

JOHN B. HALL, M.D., *Secretary.*

BOSTON MEDICAL HISTORY CLUB

There will be a meeting of the Boston Medical History Club at the Boston Medical Library, 8 Fenway, on Monday, December 20, at 8:15 p. m. Dr. James H. Means will talk on "The Development of Our Knowledge of the Glands of Internal Secretion and Their Diseases."

BENJAMIN SPECTOR, M.D., *Secretary.*

CAMBRIDGE HOSPITAL MEETING

The regular clinicopathological meeting of the staff of the Cambridge Hospital will be held at the hospital, 330 Mt. Auburn Street, Cambridge, on Tuesday, December 21, at 8:30 p. m.

All members of the medical profession are cordially invited to attend.

JOSEPH M. WADDEN, M.D., *Secretary of Staff.*

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

The next meeting of the Essex South District Medical Society will be held on Wednesday, January 5, at Danvers State Hospital. There will be a clinic at 5 p. m., and dinner at 7 p. m. The speaker will be Dr. Merrill Moore, his subject being "The Study of Alcoholic Problems."

RALPH E. STONE, M.D., *Secretary.*

CARNEY HOSPITAL MEETING

The monthly clinical meeting and luncheon of the Carney Hospital Staff will be held on Monday, December 20, in the Carney Assembly Room, at 11:30 a. m.

PROGRAM

Case reports:
Extradural abscess.
Dysgerminoma.
Third-degree perineal laceration.

Pathological discussion.

Sulphanilamide. Dr. Edward J. Leonard. Discussion by Drs. Edward C. Smith, Louis F. Curran and Roger C. Graves.

Physicians and medical students are invited to attend.

ROY J. HEFFERNAN, M.D., *Secretary.*

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, DECEMBER 20

MONDAY, DECEMBER 20
*11:30 a. m. Carney Hospital meeting. Carney assembly room.
8:15 p. m. Boston Medical History Club. Boston Medical Library, 8 Fenway.

TUESDAY, DECEMBER 21
10:30 a. m. Massachusetts General Hospital. Cardiac rounds.
*12 m. South End Medical Club. Headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue.

WEDNESDAY, DECEMBER 22
8 a. m. Massachusetts General Hospital. Grand rounds. Orthopedic department.
12 m. Clinicopathological conference. Children's Hospital Amphitheater.

THURSDAY, DECEMBER 23
9 a. m. Massachusetts General Hospital. Surgical grand rounds.
9 a. m. Massachusetts General Hospital. Neurological conference. Ether Dome.
12 m. Massachusetts General Hospital. Clinicopathological conference.

FRIDAY, DECEMBER 24
10 a. m. Massachusetts General Hospital. Fracture rounds.

*Open to the medical profession.

DECEMBER 16 — Massachusetts Society of Examining Physicians. Page 969, issue of December 9.

DECEMBER 20 — Boston Medical History Club. Notice above.

DECEMBER 20 — Carney Hospital meeting. Notice above.

DECEMBER 21 — South End Medical Club. Notice above.

DECEMBER 21 — Cambridge Hospital meeting. Notice above.

JANUARY 4 — Greater Boston Medical Society, Beth Israel Hospital, 8:30 p. m.

JANUARY 9 - MARCH 27 — Harvard University Free Public Lectures. Page 1012.

JANUARY 13 — Pentucket Association of Physicians. Hotel Bartlett, 95 Main Street, Haverhill, 8:30 p. m.

FEBRUARY 2 — Second National Social Hygiene Day. Page 1013.

FEBRUARY 14 — American Board of Internal Medicine. Page 969, issue of December 9.

APRIL 4-8 — The American College of Physicians. Page 41, issue of July 1.

MAY 31, JUNE 1 and 2 — Annual meeting of the Massachusetts Medical Society. Hotel Bradford, Boston.

OCTOBER 17-21 — Clinical Congress of the American College of Surgeons, New York City.

District Medical Societies

BRISTOL SOUTH

May 5 — 5 p. m., New Bedford.

ESSEX SOUTH

January 5 — Page 1015.

February 2 — Council Meeting, Boston.

February 9 — Essex Sanatorium, Middleton. Clinic at 5 p. m. Dinner at 7 p. m. Speaker: Dr. John B. Hawes, 2nd. Subject: Dust and Disease.

March 2 — Lynn Hospital. Clinic at 5 p. m. Dinner at 7 p. m. Speaker and subject to be announced.

April 6 — Gloucester Hospital, Gloucester. Clinic at 5 p. m. Dinner at 7 p. m. Speaker and subject to be announced.

May 5 — Censors meet at Salem Hospital, 3:30 p. m.

May 11 — Annual meeting, Salem Country Club, Peabody. Dinner at 7 p. m. Speaker and subject to be announced.

FRANKLIN

Meetings will be held at the Franklin County Hospital, Greenfield, at 11 a. m. the second Tuesdays of January, March and May.

HAMPDEN

Meetings will be held on the fourth Tuesday in January, April and July.

MIDDLESEX EAST

Meetings will be held at the Bear Hill Golf Club, Stoneham, at 12:15 p. m. on January 12, March 16, and May 11.

MIDDLESEX NORTH

Meetings will be held at the Vesper Country Club, Lowell, on January 26 and April 27.

NORFOLK DISTRICT

January 25 — Hotel Kenmore. 8:15 p. m. The Management of Uterine Prolapse. Dr. Louis E. Phaneuf.

February 23 — Hotel Kenmore. 8:15 p. m. Dermatitis Venenata Due to Cosmetics and Industrial Irritants. Dr. John G. Downing. Discussion by Dr. Francis P. McCarthy.

March 29 — Hotel Kenmore. 8:15 p. m. Subject to be announced but to be related to diseases of the kidney. Dr. Albert A. Hornor.

May — Annual meeting.

The censors meet on the first Thursdays of May and November in each year.

NORFOLK SOUTH

Meetings held at 12 noon.

January 6 — Norfolk County Hospital, South Braintree.

February 3 — Norfolk County Hospital, South Braintree.

March 3 — Norfolk County Hospital, South Braintree.

April 7 — At the Quincy City Hospital.

May 5 — Annual Meeting.

PLYMOUTH

Meetings will be held at 11 a. m. on January 20, March 17, April 21, May 19 and July 21.

SUFFOLK

January 19 — Joint meeting with Boston Medical Library.

March 15 — Joint meeting with Boston Obstetrical Society.

WORCESTER

At the following meetings, except the annual meeting, dinner will be at 6:15, to be followed by business session and scientific program.

January 12 — Worcester City Hospital, Worcester.

February 9 — Worcester State Hospital, Worcester.

March 9 — Memorial Hospital, Worcester.

April 13 — Hahnemann Hospital, Worcester.

May 11 — Afternoon and evening, annual meeting. Place and schedule of program to be announced.

BOOK REVIEWS

The Human Body. Logan Clendening. Third edition. 443 pp. New York: Alfred A. Knopf, 1937. $3.75.

Of all the books written for the layman concerning the human body in health and disease this is by far the best. It is sufficiently comprehensive; it is accurate as to fact, and instead of being troublesomely technical, is absorbingly readable from cover to cover. The public has discerned the latter fact at least; in the United States alone over 200,000 copies of earlier issues have been sold. It is to be hoped that people will realize that this latest edition, brought thoroughly up to date, largely rewritten and entirely reset, is for value received even better than its predecessors.

Opinions of this book have been strikingly unanimous. When it was first published, in 1927, both lay and medical critics joined in a chorus of acclaim. Its few detractors seem to have been recruited from those whose prejudices had been violated — Dr. Clendening is a doughty warrior against isms and superstitions and the pseudoscience of the cults — or from those who brought in question the author's judgment in certain avowedly controversial matters. But it is hard to see how the expression of an opinion, however unorthodox, is to be construed as a fault, especially when there is no effort to proselytize the reader.

Dr. Morris Fishbein has remarked that this is the type of book that every doctor could have wished, sooner or later, to write. At any rate here is a book which the doctor can unhesitatingly recommend to his patients and friends, one which, for that matter, he will make no mistake to read himself. He will enjoy the freshness and vigor of presentation, the humor, the illuminating anecdotes, and the fascinating bits of medical history that are interspersed. Nor should he forget the illustrations which, showing neither too much nor too little, really illustrate.

Dr. Clendening, the artists, the publishers and the public for whom the book is intended, all are to be congratulated.

Personal Hygiene. C. E. Turner. 335 pp. St. Louis: The C. V. Mosby Company, 1937. $2.25.

This small volume on personal hygiene is a revision and adaptation of the author's earlier and larger work *Personal and Community Health.* As stated in the preface it is planned for the various college-level groups and aims to present the essentials of personal hygiene along with enough anatomy and physiology to make clear the main subject of the book.

The volume is clearly written and should prove interesting to those for whom it is intended. Within the limits of a small volume the subject matter is quite complete and has been brought well up to date. The chapter on mental hygiene seems especially sound and well presented, as does the one on responsibility for health maintenance. In this latter chapter advice is given regarding the choice of a physician not only to treat disease when it has arrived but to see the individual during health and prevent the advent of illness.

On the whole the book is sanely and soundly written and well illustrated, and the reviewer feels should be recommended to college students.

Adaptation in Pathological Processes. Publications of The Institute of the History of Medicine, the Johns Hopkins University. Fourth series, *Bibliotheca Medica Americana,* volume 3. William H. Welch. 58 pp. Baltimore: The Johns Hopkins Press, 1937. $1.50.

This reprint of one of Dr. Welch's classic lectures given in 1897 well deserves renewed attention as one of the medical classics.

The introduction by Simon Flexner adds much to the enjoyment which the reader will obtain. The lecture accurately reflects Dr. Welch's forceful and pleasing presentation. Though now forty years old, the main thread of argument retains its vitality unimpaired.